

TRUENORTH ENERGY CORPORATION

**Application to Construct and Operate an
Oil Sands Mine and Cogeneration Plant
in the Fort McMurray Area**

October 22, 2002

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ALBERTA ENERGY AND UTILITIES BOARD

Decision 2002-89: Application to Construct and Operate an
Oil Sands Mine and Cogeneration Plant in the Fort McMurray Area

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**TRUENORTH ENERGY CORPORATION
APPLICATION TO CONSTRUCT AND OPERATE
AN OIL SANDS MINE AND COGENERATION
PLANT IN THE FORT MCMURRAY AREA**

**Decision 2002-089
Applications No. 1096587 and 2001202**

1 APPLICATIONS

TrueNorth Energy Corporation (TrueNorth) filed Application No. 1096587 with the Alberta Energy and Utilities Board (EUB/Board) pursuant to Sections 10 and 11 of the Oil Sands Conservation Act, for approval to construct and operate an oil sands mine and bitumen extraction facility, the Fort Hills Oil Sands Project (FHOSP). The proposed mining project would be located east of the Athabasca River, approximately 90 kilometres (km) north of Fort McMurray in Townships 96 and 97, Ranges 9 to 11, West of the 4th Meridian, within the Regional Municipality of Wood Buffalo. The proposed project includes an open pit, truck and shovel mine, two bitumen processing trains, infrastructure associated with the mine and facility, water and tailings management plans, and an integrated reclamation plan (Figure 1). The project is designed to produce approximately 30 000 cubic metres (m³) of bitumen product per day.

TrueNorth made Application No. 2001202, pursuant to Sections 11, 14, and 15 of the Hydro and Electric Energy Act, for approval to construct and operate an electrical power plant and a transmission substation located at the project site. The cogeneration plant would consist of two 80 megawatts (MW) gas turbine generators, each fitted with a heat recovery steam boiler.

Under a coordinated application process adopted by Alberta Environment (AENV) and the EUB, TrueNorth filed a joint application and environmental impact assessment (EIA). These applications also included those for specific approvals under the Alberta Environmental Protection and Enhancement Act (EPEA) and the Water Resources Act.

2 DECISION

The Board has carefully considered all of the evidence pertaining to the applications and finds that the TrueNorth Fort Hill Oil Sands Project is in the public interest for the reasons set out in this report. Therefore, the Board approves Application No. 1096587 with conditions. With respect to Application No. 2001202, the Board approves the cogeneration portion but is deferring its decision respecting the substation for the reasons outlined in this report. The Board expects that TrueNorth will adhere to all commitments it made during the consultation process, in the application, and at the hearing on such matters as mitigation, monitoring, and bilateral agreements.

3 HEARING

The applications were considered by the Board at a public hearing held in Fort McMurray, Alberta, July 2-10, 2002, before Board Members J. R. Nichol, P.Eng., T. M. McGee, and M. Neil McCrank, Q.C. (Presiding Member).

Department of Environment (Environment Canada) and Fisheries and Oceans Canada (DFO) provided written submissions on September 6, 2002. Participants at the hearing were given two weeks, until September 20, 2002, to provide written comments on this submission. TrueNorth, Fort McKay Industrial Relations Corporation, the Alberta Council of the Canadian Federation of University Women (CFUW), Wood Buffalo First Nations (WBFN), the Oil Sands Environmental Coalition, and the Alberta government all provided comments with respect to this submission. The Board considers that the evidentiary portion of the application was concluded on that date.

Those who appeared at the hearing and a list of abbreviations used in this decision are set out in the following table.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives (Abbreviations used in report)

Witnesses

TrueNorth Energy Corp. (TrueNorth)

D. R. Thomas, Q.C.
M. K. Ignasiak
P. Kinnear
K. E. Sibold

D. Park.
A. Hyndman, P.Eng.
G. Chow, P.Biol.
C. Grant, P.Eng.
R. Eccles, P.Biol.
L. Halsey, P.Geol.
I. Mackenzie
J. Aiello, P.Eng.
R. Rudolph
B. Koppe
D. Vitt, Ph.D.
L. Leskiw, P.Ag.
R. Dawson, P.Eng.
M. Ingen-housz
B. Cox
W. Unfreed

Oil Sands Environmental Coalition (OSEC)

K. E. Buss

C. Severson-Baker
A. Dort-MacLean
M. Kitagawa
D. Woynillowicz
G. MacCrimmon

(continued)

THOSE WHO APPEARED AT THE HEARING (continued)

Principals and Representatives (Abbreviations used in report)

Witnesses

Alberta Council of the Canadian Federation
of University Women (CFUW)

K. E. Buss

E. Oakes

R. Robinson

Fort McMurray Medical Staff Association

K. E. Buss

M. Sauve, M.D.

W. Flexer, M.D.

A. Nicholson, M.D.

Diana Horton

Diana Horton, Ph.D.

Alberta Wilderness Association (AWA)

Richard Thomas, Ph.D.

Richard Thomas, Ph.D.

Wood Buffalo First Nations (WBFN)

John Malcolm

John Malcolm

J. Flobert

H. Scanie

E. Robbillard Jones

R. Woodward

Cree Burn Lake Preservation Society

Lorraine Hoffman Mercredi

Phillip Coutu

Annette Campre

Theresa Campre

Fort McKay First Nation and Metis

Local Number 122 (Fort McKay)¹

Lynn Kemper

Canadian Natural Resources Limited (CNRL)¹

Herb Longworth, P.Eng.

Shell Canada Limited (Shell)¹

B. S. Gilmour

(continued)

¹ Fort McKay, CNRL, and Shell were registered participants but did not participate in cross-examination or closing argument.

THOSE WHO APPEARED AT THE HEARING (concluded)

Principals and Representatives (Abbreviations used in report)

Witnesses

Suncor Energy Inc. (Suncor)²
S. Lowell

Syncrude Canada Limited (Syncrude)²
J. B. Wolsey

Department of Justice Canada³
B. F. Hughson

Government of Alberta, Minister of Environment,
Minister of Sustainable Resource Development (SRD),
and Minister of Health and Wellness (Alberta)

W. A. MacDonald
D. W. Stepaniuk

M. Boyd (Panel Chair)
A. MacKenzie (Alberta Health)
N. St. Jean (SRD)
R. George (AENV)
L. Norton (AENV)
L. Cheng (AENV)
R. Chabaylo (SRD)
C. Ng (AENV)

Alberta Energy and Utilities Board staff

Michael J. Bruni, Q.C.
A. Larson, P.Eng.
M. Dmytriw, R.E.T.
A. Sellick, P.Eng.
R. Powell, P.Biol.
B. Austin, P.Geol.
W. MacKenzie

² Suncor and Syncrude only presented closing argument.

³ Department of Justice Canada participated in cross-examination and closing argument only.

Birch Mountain Resources Ltd., Northland Forest Products Ltd., Alberta Pacific, Aggregates Management Inc., Athabasca Fort Chipewyan, Mikesew Cree, and Metis 1935 all provided written submissions but did not appear at the hearing.

4 ISSUES

The Board believes that the issues to be considered with respect to Application No. 1096587 are

- need for the project,
- mine planning and resource conservation,
- tailings management,
- bitumen extraction,
- water management,
- McClelland Lake Wetland Complex,
- environmental effects,
- reclamation,
- abandonment liability and enforcement,
- cumulative effects of oil sands developments, and
- socioeconomic effects and public consultation.

5 NEED FOR THE PROJECT

5.1 Views of the Applicant

TrueNorth stated that the Fort Hills Oil Sands Project (FHOSP) would result in a positive contribution to the efficient development of Alberta's oil sands resources. The FHOSP would be located on oil sands leases 5, 8, and 52, already purchased by TrueNorth. TrueNorth believed that given the magnitude of the proposed investment, there was huge potential for not only resource wealth for all Albertans and Canadians but also benefits arising from the economic and social opportunities resulting from the project.

TrueNorth submitted that the project was expected to cost \$3.5 billion and would create employment and business opportunities during construction and operation. The project was expected to employ over 1000 people once it reach full production and throughout its operational life. TrueNorth estimated that the project would pay \$8.0 billion in royalties to the Province of Alberta and another \$9.0 billion in revenue to the federal and provincial governments in corporate taxes over its life.

TrueNorth provided letters of support for the FHOSP received from a variety of commercial, municipal, and local interests, including Keyano College, Fort McMurray Chamber of Commerce, Edmonton Chamber of Commerce, Northern Lights Regional Health Foundation, Alberta Chamber of Commerce, Northern Lights Regional Health Authority, Northern Alberta Aboriginal Business Association, Tuccaro Inc., NTS Ltd., TUC's Contracting, Calgary Chamber of Commerce, and the Regional Municipality of Wood Buffalo.

5.2 Views of the Interveners

The interveners did not submit evidence with respect to this issue.

5.3 Views of the Board

The Board acknowledges the significant economic benefits to the region, province, and Canada that would result from the construction and operation of the FHOSP. The Board also acknowledges the letters of support submitted by various local stakeholders. The Board finds that the issue of need has been addressed satisfactorily.

6 MINE PLANNING AND RESOURCE CONSERVATION

6.1 Mine Opening Location and Project Area

6.1.1 Views of the Applicant

TrueNorth stated that it would begin mining activities in Mining Area 1 (Figure 1) to the east of the west overburden disposal area. TrueNorth indicated that while parts of the initial mine opening location do not have Clearwater clays present in the overburden, Clearwater clay would be encountered within the first two to three years of mining. TrueNorth stated that it was unsure whether a relatively small relocation of the initial mine opening, up to 1 kilometre (km), would be adequate to provide access to sufficient quantities of Clearwater clays to allow construction of a liner for the Out-of-Pit Tailings Area (OPTA).

TrueNorth indicated that the project area it was applying for constituted the entire area of oil sands leases 5, 8, and 52 areas (Figure 1), with the exception of the setback to the McClelland Lake fen in the north. TrueNorth also indicated that in the event that it chose to undertake activities in the portion of Lease 52 that falls within the Muskeg River drainage basin, work would not proceed without a thorough assessment of ground and surface water effects. TrueNorth believed that should the Board grant an approval of the proposed project area, it would contain a condition that TrueNorth not undertake activities within the Muskeg River basin without the assessment work being undertaken.

6.1.2 Views of the Interveners

None of the interveners expressed views regarding the mine opening location or project area.

6.1.3 Views of the Board

The Board is satisfied with the mine opening but believes there may be opportunity to adjust the initial mine opening if it is shown that Clearwater clays are needed for the tailings area. The possible need for a seepage blanket for the OPTA is discussed in Section 7.

With regard to the project area, the Board believes that the project area should allow the company opportunity to implement its applied-for project. The Board understands that the project as proposed does not include any development or activity in the Muskeg River basin, nor does it include any assessment of impacts respecting this area. In the absence of proposed development plans and, in particular, the absence of any environmental assessment respecting the Muskeg River basin, the Board is not prepared to approve the inclusion of this portion of Lease 52 in the

project area. The Board will approve a project area covering Leases 5, 8, and 52, excluding the Muskeg River basin. Should TrueNorth wish to expand operations into this area, it will have to file the appropriately supported application to expand the project boundaries.

6.2 Lease Boundary Mining

6.2.1 Views of the Applicant

The FHOSP and the Syncrude Aurora North project share a common lease boundary. TrueNorth stated that based on the mine plan proposed in the application, approximately 100 million barrels of recoverable bitumen could be sterilized at the lease boundary.

TrueNorth stated that the resolution of mining and backfill timing issues and the configuration of the mine and in-pit tailings containment structures at the lease boundary were part of broader discussions between TrueNorth and Syncrude on matters of common interest. Additionally, TrueNorth indicated that it was working toward an agreement with Syncrude that would maximize resource recovery at the boundary and that any agreement would be subject to the approval of both companies as well as the Board. TrueNorth expected that agreement in principle among the parties would be achieved by the end of 2002.

TrueNorth indicated that it intended to construct a haul road and an interceptor ditch in the area of the lease boundary. However, TrueNorth stated that these features would be relatively short lived and that any costs associated with these features would not factor in to any economic analysis of alternatives respecting bitumen recovery at the lease boundary.

6.2.2 Views of the Interveners

The interveners did not present any views on lease boundary mining.

6.2.3 Views of the Board

The Board understands that TrueNorth is still in discussions with Syncrude to arrive at a method to mine the lease boundary that will maximize ore recovery. The Board acknowledges TrueNorth's statement that under its present proposal, infrastructure built in the area of the lease boundary will not factor into the economic evaluation of resource recovery options for lease boundary mining. It is the Board's view that should TrueNorth, in the future, choose to build infrastructure in the area of the lease boundary, the decision to do so must be consistent with the orderly and efficient development of the resource. It follows that TrueNorth must be prepared to demonstrate that there was no viable alternative to locating these facilities. A failure to do so may compel the Board to disregard the costs associated with the removal and replacement of such facilities from any future economic evaluation of lease boundary mining options.

The Board recognizes the importance of understanding the lease boundary treatment prior to finalizing OPTA design and size. Therefore, the Board directs TrueNorth to submit a proposal for treatment of the common FHOSP/Syncrude Aurora North Project lease boundary on or before January 15, 2003.

6.3 Mining in Proximity to the Athabasca River

6.3.1 Views of the Applicant

TrueNorth stated that the offset from the Athabasca River to the mine pits would be greater than 1:100 year flood elevation and would vary beyond that elevation based on safety considerations, physical constraints, and environmental features, such as potential river valley wall erosion. Mine operations would be located a sufficient distance from the historic sites near the river to ensure ground stability and safe, unimpeded access.

TrueNorth acknowledged the need to undertake additional technical investigations along the mining area next to the Athabasca River, specifically in Mining Areas 6, 7, and 8. The technical investigations would include

- additional resource drilling to provide more data for the geologic model,
- oxidation testing to confirm recoverability of the bitumen resource in the potentially affected areas,
- detailed mapping of the east bank of the Athabasca River adjacent to all proposed pit walls,
- site-specific geotechnical stability analyses,
- a hydrogeological field program to determine the level of hydraulic conductivity between the river and the proposed pit area,
- design of a system for monitoring erosion along the east bank of the river,
- development of groundwater seepage models to assess the degree of seepage that may be expected from the river during mining,
- design of dewatering systems capable of handling the forecast seepage flows into the pit area,
- completion of an economic evaluation of bitumen recovery at various setback distances from the Athabasca River in light of the findings of the foregoing detailed investigations, and
- completion of the final design of the west pit wall of Mining Areas 6, 7, and 8.

TrueNorth stated that it would be necessary to complete the technical initiatives describe above approximately five years in advance of scheduled mining activities. TrueNorth indicated that within the proposed mine plan, the technical analyses would be completed for Mining Area 7 in 2009, for Mining Area 6 in 2025, and for Mining Area 8 in 2030.

TrueNorth believed that there was little evidence to suggest that large mammals used the Athabasca River valley as a north-south movement corridor in the absence of development. It believed the river valley was more important as habitat. The slumping terrain west of the Solv-Ex site and south of Fort Creek was important to a number of species due to the large balsam poplar and white spruce, which were uncommon at upland sites. The coarse woody debris found there made the area good habitat for black bears. TrueNorth noted that Sustainable Resource Development's (SRD) wildlife maps recognized the valley as important winter moose habitat. It said that maintaining access between the river valley and upland habitats was more important than maintaining a north-south corridor. TrueNorth stated that it was important to recognize that the phased approach of the mine and its program of progressive reclamation would ensure connectivity between the river valley and upland sites. Due to this phased approach, the more northerly reaches of the river would be completely open to animals during operation of the south mine. Conversely, as the mining operation moved north, the south mine would be reclaimed and the area would become much more accessible to wildlife. TrueNorth stated that studies

conducted in other mining areas adjacent to a river showed that species diversity, though not necessarily abundance, increased with corridor width.

TrueNorth indicated that it had prepared a brief assessment of Mining Area 8 prior to Mining Area 2, as proposed in the application. TrueNorth agreed that Mining Area 8 had a lower total volume of material to bitumen in place (TV:BIP) ratio than Mining Area 2, but indicated that without going through a detailed material balance, it was difficult to determine whether mining in Mining Area 8 would be less costly than mining in Mining Area 2. TrueNorth stated that if it moved to Mining Area 8 first, it could be difficult to generate sufficient in-pit tailings storage space, a consideration that persuaded TrueNorth to choose Mining Area 2 rather than Mining Area 8 at the time of the hearing.

6.3.2 Views of the Interveners

Views of OSEC

The Oil Sands Environmental Coalition (OSEC) supported Alberta's call for a public interest determination on the question of an appropriate setback of development from the Athabasca River. Its view was that the setback should be no less than 500 m and should be measured from the valley break, not the river channel.

Views of Alberta

Alberta noted that declining habitat connectivity was associated with declining populations, both in mathematical population models and in practice. It referred to guidelines in the Integrated Resource Plan (IRP) that directed resource users to protect key ungulate winter ranges and river corridors where the animals concentrate. The guidelines stated that special constraints may be applied to development proposals to maintain critical moose wintering habitat in the Athabasca River valley.

Alberta stated that a continuous effective valley corridor near the Athabasca River had already been compromised by development. It said that additional mining disturbance in the valley would add to the cumulative effect. Alberta stated that winter tracking studies at other oil sands operations showed that large, wary mammals avoid narrow corridors (130 m to 200 m) but use wider corridors (550 m to 2000 m). It said these results were based on two years of data and that definitive results would require more work. Alberta noted that TrueNorth's proposal would place some mining activities as close as 155 m from the river channel.

Alberta believed that the widest possible setbacks would have the greatest benefit for wildlife and biodiversity and would also benefit Aboriginal needs, aesthetics, recreation, and historic interests. It offered no specific suggestion as to how wide the setbacks should be, but submitted that a 1 km setback might provide adequate protection for wildlife until further research demonstrated the acceptability of narrower setbacks or the need for wider setbacks.

Alberta stated that the question of an appropriate setback required a public interest determination. It recommended that the Board identify an appropriate setback in its decision and make it a condition of any approval of the project.

6.3.3 Views of the Board

The Board notes that TrueNorth acknowledged the need to undertake additional technical investigations along the mining area next to the Athabasca River, Mining Areas 6, 7, and 8. The Board directs that its approval reflect the need for completion of the technical investigations, submission of reports, and the resulting mine plan for Board approval at least five years prior to start-up of mining activities in these areas. The Board directs that this information be submitted on or before December 15, 2009, for Mining Area 7 and 2025 for Mining Areas 6 and 8. The additional information will consist of ore quantity and quality, geotechnical stability, and all other issues identified as a result of mining in close proximity to the river.

Since there is still uncertainty with respect to ore quality and quantity near the Athabasca River, pit design criteria, and impact of corridor width on wildlife, the Board believes it is not in a position to impose a firm setback from the Athabasca River for a wildlife habitat or corridor at this time. TrueNorth believes that its reclamation schedule will eliminate some of the concerns. Since Mining Areas 6 and 8 will not be mined till after 2025, the Board thinks it will have sufficient time to evaluate the impact of reclamation success, the additional resource information, and any further wildlife studies prior to establishing a setback for mining operations in this area. The Board holds that any setback, once prescribed, will be from the valley break, not the 1:100 high-water mark.

The Board expects that the setback distance will ultimately depend on the additional work to be done to evaluate impacts on wildlife, potential sterilization of oil sands resources, and the actual pace of the progressive reclamation scheme proposed by TrueNorth. Therefore the Board intends to work with Alberta and TrueNorth to establish what other work will be required to allow for a thorough evaluation of the required setback distances. The Board will determine the appropriate setback prior to mining in Mining Areas 6 and 8.

At the hearing, TrueNorth indicated that it did not plan to change its mine sequencing to mine Lease 8 first. The Board observes that a change in mine sequencing would create a significant change to the reclamation schedule and would require a decision on the appropriate setback from the river. The Board also believes this change in mine sequencing could create significant changes to the mine plan and tailings management plan. Therefore, if TrueNorth chooses to mine the Lease 8 area early, the Board views this as a significant change and it would require an approval amendment.

6.4 Potential Mine Extensions (Area 1A)

6.4.1 Views of the Applicant

TrueNorth indicated that it had examined a potential extension of Mining Area 1 into Mining Area 1A but concluded from the analysis that the extension would have an aggregate TV:BIP ratio greater than 12:1 and considered it to be unmineable. TrueNorth explained that the analysis had been completed with a number of different configurations, including a number of incremental additions to Mining Area 1 and as a stand-alone pit. TrueNorth stated that if further information were needed by the Board to decide if Mining Area 1A should be mined, it would be willing to provide additional information. TrueNorth indicated that if further work resulted in the

modification of mining limits around Mining Area 1A, it should not have an impact on either the size of the OPTA or the resolution of the lease boundary issue.

6.4.2 Views of the Interveners

The interveners did not provide comments on potential mine extensions.

6.4.3 Views of the Board

The Board notes there are potential oil sands resources under Mining Area 1A. The Board believes that additional work to more accurately refine the appropriate pit limits will be necessary. The Board directs TrueNorth to submit a final evaluation of the oil sands resources in Mining Area 1A, including determination of final mining limits, for consideration and approval of the Board on or before December 15, 2007.

6.5 Utility Corridor, In-Pit Ore Preparation Facilities, and Plant Site

6.5.1 Views of the Applicant

TrueNorth stated that drilling completed over the 2000/2001 program provided additional information in the proposed utility corridor area that indicated that the corridor was economic to mine and that relocation of that corridor would have to be considered as part of the ongoing planning process. TrueNorth indicated at the hearing that the utility corridor would likely change and proceed farther north parallel to the road and enter the site parallel to the proposed access road. This would require a subsequent relocation back onto one of the interim dikes across the pit to facilitate mining. TrueNorth asserted that the change to this utility corridor would not affect the timing of in-pit tailings activities or the size of the OPTA. Additionally, TrueNorth confirmed that the lease boundary discussions under way with Syncrude would not affect the decision regarding the alignment of the utility corridor. TrueNorth indicated that no fieldwork was planned in the winter of 2002/2003 on the utility corridor.

TrueNorth testified that the in-pit ore preparation plants would be relocated periodically in an effort to reduce ore haul costs within the pit. TrueNorth also stated that the estimated cost to move the in-pit ore preparation facilities would be approximately \$20 million, depending on the amount of equipment being moved, the means of moving it, and the degree of reconstruction. It said that determination of the relocation sequence would require an optimization between the ore haul costs, the costs of the move, and the production outage associated with the time required for the move. TrueNorth said that if the cost of moving the ore preparation facilities increased, it would not affect plans for in-pit tailings placement because the initial siting of the facilities would not impede initial in-pit tailings activities.

TrueNorth provided a plot plan of the proposed plant site as part of the application and showed that the site layout would be adequate for two extraction trains. Furthermore, TrueNorth indicated that while detailed analysis had not been done, it believed that some additional facilities could be accommodated within the site as shown and, if necessary, to install debottlenecking equipment within the site. TrueNorth stated that it had not analyzed the

possibility of installing a third train within the site but thought that the installation of a third train would be difficult due to topographical limitations.

6.5.2 Views of the Interveners

Alberta's view was that the location of the TrueNorth utility corridor proposed in the application would not be consistent with the IRP. It stated that a corridor location 100 m east of Highway 63, with a 100 m visual buffer between the highway right-of-way and the utilities corridor, would be preferable. Alberta recognized that this would result in the movement of the West Overburden Disposal Area eastward to allow room for placement of the utility corridor and visual buffer

6.5.3 Views of the Board

The Board recognizes that TrueNorth has altered the utility corridor alignment since the filing of the application. The Board directs TrueNorth to submit for Board approval a report describing the location of the new utility corridor alignment, the facilities to be placed in the corridor, any expected impacts to the mining, overburden disposal, and/or in-pit tailings operation, and the plan for relocation of the corridor to allow mining to proceed in Mining Area 7 on or before February 28, 2003.

The Board notes that TrueNorth is still optimizing its ore preparation plant relocation schedule. It acknowledges TrueNorth's statement that increased costs for moving the ore preparation plant would not impact in-pit placement of tailings. The Board realizes that the costs of construction and operation of oil sands plants continue to increase and that there is a real chance the cost of relocating the in-pit facilities may exceed the estimate by a significant amount. Delays in moving the in-pit ore preparation plant may impact tailings plans and the mine planning process. Therefore, it is important for the Board to understand how TrueNorth proposes to manage these plants, and it directs TrueNorth to provide an update of the long-term in-pit ore preparation plant relocations by December 15, 2007.

The Board agrees that the plant site appears to be optimally located relative to both operational economics and resource recovery. The Board notes that any expansion outside the proposed boundary might interfere with the OPTA, the south overburden disposal area, or the mine pit limit. Therefore, should the size not prove to be adequate in the future, the Board will require TrueNorth to obtain an approval from the Board.

6.6 Overburden Disposal Plan and Discard Site Design

6.6.1 Views of the Applicant

TrueNorth stated that a number of discard sites for overburden and similar waste materials would be required for the life of the project. The west overburden disposal area would be the first developed. TrueNorth noted that this site was situated on top of Clearwater clays and the design of the disposal area took into account the impact of the clay foundation. TrueNorth also noted that the west overburden disposal area also contained an aggregate resource, which it planned to salvage and use for road construction.

TrueNorth indicated that it had investigated the merits of out-of-pit overburden disposal east of Mining Area 1 and north of reclamation stockpile-1 (RMS-1) as part of its prefeasibility evaluation of the FHOSP. The study demonstrated that the cost penalty associated with hauling overburden to this dump area as opposed to the west disposal area was significant due to an extended uphill haulage requirement. TrueNorth believed that it could add somewhere between \$0.20 and \$0.40 per bank cubic metre to move material to that disposal area. TrueNorth indicated that since it had developed a workable material balance for overburden and tailings, there was no sound rationale for adopting high-cost contingency options, such as the east dump area. However, if TrueNorth was not able to place the designated amount of material in the west overburden disposal area, it would have to find a disposal area on the east side of Mining Area 1 adjacent to RMS-1.

The proposed north overburden disposal area would be developed to the north of Mining Areas 2 and 3, starting around 2015. TrueNorth agreed that it would be possible to extend the north disposal area to the north rather than to the east as proposed, while maintaining the required dump capacity. This would result in approximately 420 hectares of disturbance in the McClelland Lake watershed being avoided. TrueNorth stated that it was prepared to accept a condition requiring it to further evaluate options for the north overburden disposal area.

6.6.2 Views of the Interveners

The interveners did question the impact of the north overburden disposal area on the fen and were supportive of removing all that could have an impact on the McClelland Lake watershed.

6.6.3 Views of the Board

The Board accepts that the preliminary designs used by TrueNorth for the overburden disposal areas are reasonable, based on the currently available information regarding geotechnical characteristics of the sites and materials, and that the use of these designs for long-range planning of waste storage requirements is appropriate. However, the Board directs TrueNorth to submit for approval detailed geotechnical designs for all external overburden disposal areas at least six months prior to field preparation in these areas.

The Board notes that the west overburden disposal area design has yet to be finalized. The Board believes that TrueNorth may need to reduce the storage volume of this disposal area due to the geotechnical limitations of the Clearwater clay. The Board also believes that TrueNorth may find it requires additional disposal space due to reduction in volume of the west disposal area, lease boundary treatment, or optimization of the mine plans. The Board thinks it is reasonable for TrueNorth to investigate possible additional overburden disposal areas, and it directs TrueNorth to submit a report describing a conceptual design of an overburden disposal area that could be constructed in the area east of Mining Area 1 and north of RMS-1 on or before January 15, 2003. This report will include

- a description of the foundation conditions assumed to complete the conceptual design of the dump and the rationale for those use of those assumptions;

- a description of the slopes, bench heights, and overall height of the conceptual design, together with a discussion of the potential for these design parameters to change substantially as a result of more detailed site investigation and/or analyses;
- a tabulation of volumes of overburden that could be stored using the conceptual design broken down by benches; and
- a discussion of the potential uses of the disposal area to offset storage losses arising from potential changes to the west disposal area, the lease boundary treatment, the in-pit tailings deposition schedule and/or volumes, or other uses.

6.7 Operating Criteria for Bitumen Resource Recovery

6.7.1 Views of the Applicant

TrueNorth stated that its mine reserves were calculated using mining criteria established by EUB *Interim Directive (ID) 2001-7: Operating Criteria: Resource Recovery Requirements for Oil Sands Mine and Processing Plant Sites*. The criteria used were a minimum mining thickness of 3 m for ore and waste, a minimum cutoff grade of 7 per cent bitumen, and a TV:BIP less than or equal to 12:1 based on the mining thickness and cutoff grade criteria.

TrueNorth indicated that the primary criterion it had used in establishing pit limits was TV:BIP, but the final pit limit had consideration for physical constraints. TrueNorth stated that the physical constraints incorporated in the mine plan were the Athabasca River and the Bitumount, Calumet, and Fitzsimmon's historic sites.

TrueNorth accepted the operating criteria concept in principle, as defined by the *ID 2001-7*, but it believed that the minimum criteria that would trigger an enforcement action by the EUB should be set lower. Specifically, it believed that the extraction recovery requirements, which are currently defined by the extraction curve, at grades between 10 and 12 per cent should be 2 per cent lower. TrueNorth recognized that there was a review process in place for the interim directive and that it was presently in a trial period, so there would be opportunity to review the criteria.

TrueNorth submitted that the EUB should support companies like itself that seek to be innovative in technology selection. TrueNorth submitted that project proponents must be given time to research and perfect an innovative technology under normal operating scenarios before enforcement was initiated, and only in that way would industry continue to make technical progress. It requested that the Board grant it a three-year relaxation period in regard to the operating criteria requirements. TrueNorth contended that the approval of such a relaxation for the start-up period would be consistent with what the Board has approved for prior applications.

TrueNorth also requested a relaxation in regard to the minimum cutoff grade criterion from 7 per cent to 8 per cent for the initial 60 million tons (Mt) of feed for about the first year of mining. TrueNorth indicated that the mine plan forecast that approximately 2.4 Mt of marginal ore grading 7 per cent to 8 per cent bitumen would be released in conjunction with the initial 60 Mt of ore scheduled for processing. It stated that this marginal material equated to 3.8 per cent of the oil sands feed and was forecast to have fines content of 30.1 per cent passing 44 microns. TrueNorth argued that new mining operations had experienced significant challenges in

achieving steady-state process design capacity when encountering this type of oil sands without having the ability to blend off with higher-grade oil sands. It said that the requested relaxation would result in the loss of 0.9 million barrels of bitumen and maintained that, given the low tonnage of marginal material and its inherent processing problem potential, the requested relaxation was appropriate and consistent with economic resource recovery. Although it did not provide detailed technical, economic, and geological information to support the requested relaxation, TrueNorth stated that other companies had been granted this relaxation and it sought the same relief.

6.7.2 Views of the Interveners

The interviewers did not express any comments with respect to operating criteria.

6.7.3 Views of the Board

The Board directs TrueNorth to meet the resource recovery requirements specified in *ID 2001-7* for the reasons set out below.

The Board notes that although TrueNorth indicated that it would meet operating criteria requirements as set out in *ID 2001-7*, it requested that the Board grant it a three-year relaxation prior to achieving those requirements. In addition to the relaxation on operating criteria, TrueNorth has also requested a relaxation of cutoff grade from 7 per cent to 8 per cent for the first 60 million tonnes of feed. This would result in the loss of about 0.9 million barrels of recoverable bitumen. The Board notes that operating criteria were developed in consultation with the oil sands industry over a number years. With the adoption of the operating criteria, the Board has stressed that if an applicant is not going to meet operating criteria requirements, it must submit a full technical and economic justification to support its assertion that the relaxation was warranted. Consequently, the Board is not prepared to grant the grade cutoff relaxation at this time.

In support of TrueNorth's request for relaxation, it argued that other companies had been granted such a relaxation. It is the Board's view, however, that *ID 2001-7* creates a different regulatory environment than existed previously and the TrueNorth application is the first one to be reviewed and approved in this new regulatory regime.

While it is true that the Board has granted short-term exemptions for extraction recovery levels for earlier projects, the issuance of *ID 2001-7*, which took effect on January 1, 2002, has resulted in a single set of operating criteria requirements for resource recovery that have superseded the operating criteria requirements set out in each of the earlier approvals. Previous exemptions for extraction recovery are no longer valid; for example, the Albion Muskeg River project will not operate at all under its initial approval criteria for bitumen recovery. Furthermore, the relaxations that were granted in the past were for higher extraction levels than the 90 per cent at an average ore grade of 11 per cent, as specified in *ID 2001-7*. The operating criteria allow for a range over which a project may be operated and are not tied to a specific recovery level.

The operating criteria concept sets the requirements of resource conservation using a set of four criteria—TV:BIP, selectivity, cutoff grade, and extraction recovery—that are not individually

subject to enforcement. It is the overall amount of bitumen recovered in a year that must be achieved by the applicant. If TrueNorth's extraction plant recovery is low, it has the opportunity to offset any deficit in production by mining material over TV:BIP=12, by reducing cutoff grade, or by altering selectivity.

The Board observes that the operating criteria performance measuring system is an after-the-fact system in that the quantity of bitumen that should have been recovered during the year is estimated after the year is completed, and if there is any requirement for enforcement action, it would not take place until about February of the year following the performance reporting period. If the Board were to accept TrueNorth's request for a three-year relaxation period, it would not be reviewing the project performance until it had been operating for four years. The Board believes it is important for it to be involved in the critical first few years of operation so that it is able to understand the issues a company is facing and thus has the opportunity to provide direction regarding the measures the company is employing to solve those issues.

The Board understands that starting up a green fields oil sands project can be challenging. It invites TrueNorth to submit for approval a detailed plan that would specify possible increased bitumen losses due to commissioning of the plant. The plan would need to be submitted at least three months prior to commissioning. The commissioning plan must be specific to the TrueNorth site. The Board would expect commissioning of a green fields site, which incorporates existing technology, to take three to six months.

The operating criteria expressed in *ID 2001-7* will be reviewed by the Board in 2005, with a view to determining the reasonableness and appropriateness of the criteria. The Board notes that TrueNorth will not be starting up the plant until 2005 and thus would be able to incorporate or take advantage of any changes to the operating criteria that result from this review.

7 TAILINGS MANAGEMENT

7.1 Tailings Technology and Overall Tailings Disposal Plan

7.1.1 Views of the Applicant

TrueNorth indicated that the tailings management plan for the FHOSP was designed to achieve economic operation while allowing the creation of a stable, reclaimable landscape in as short a time period as practical. Its stated planning objectives to support those goals were

- minimization of water ponding within the OPTA,
- maximization of interbedding of coarse and thickened tailings,
- progressive reclamation in an expeditious manner,
- integration of the OPTA into the surrounding landscape to minimize visual impacts,
- minimization negative impacts on the site water balance, and
- minimization the OPTA footprint.

TrueNorth testified that in choosing a tailings technology for the FHOSP, it had examined the relative merits of conventional tailings disposal, filtered tailings, paste tailings, and composite tailings using thickened tails. The thickened tailings process was selected based on enhanced

energy conservation because of reduced make-up water requirements and minimized longer-term land disturbance. These benefits were considered to outweigh the higher capital cost of this approach. TrueNorth said that the approach had been in use for several years in numerous aluminum and industrial mineral operations throughout the world and that it would also be in operation at the Albion Sands Muskeg River oil sands mine in 2002.

TrueNorth said that the tailings process used at the FHOSP would be based on both a coarse tails system and a new thickened tailings process for handling fine tailings. It indicated that the thickened tailings technology was an important part of the project's energy integration and water recycle plans. The thickened tailings process would facilitate the recycling of both warm and hot water and would minimize energy loss to the tailings discharge. TrueNorth submitted that as part of the process, thin fine tails (TFT) from the tailings deposits would be recycled back to the process shortly after release, so that continuous accumulation of mature fine tailings (MFT) could be avoided.

TrueNorth explained that its proposed tailings process contrasted with current oil sand operations that relied on the use of large tailings ponds to provide the settling area and residence time required for clarifying the recycled water and densifying the slurry of TFT that settled with time to create large amounts of MFT. TrueNorth also noted that its tailings management process differed from the Composite Tailings (CT) process employed by other operators. In the CT process, MFT is mixed with gypsum and coarse sand tails to produce a solid deposit.

TrueNorth stated that it was committed to advancing the current tailings management practices to achieve an economical process that provided a stable reclaimable landscape in as short a time as practical. TrueNorth indicated that it had participated in the CONRAD Thickened Tailing initiative since 2001. The CONRAD 2001 program demonstrated that oil sands fine tailings can be densified but that work remained with respect to performance factors of thickened tailings processing and further evaluation of thickened tailings deposits. TrueNorth indicated that more work is planned for 2002 by CONRAD, which would enable it to fine tune and more accurately predict the details of the tailings deposition plan.

TrueNorth stated that its objective in developing plans for tailings management at the FHOSP was to have a viable plan based upon well-founded planning assumptions, while remaining positioned to take advantage of industry advances in technology and practices, particularly with respect to reclamation design and long-term landscape performance.

TrueNorth's plan incorporated thickened tailings technology to manage the fine tailings stream; the coarse sand tailings would be handled separately. It stated that initially all tailings would be deposited in an OPTA until sufficient space was developed in-pit to handle ongoing tailings deposition volumes. It stated that the design for the OPTA would be based on the requirement to place tailings outside of the active mining area for period of six years. It indicated that there was an opportunity to expand the OPTA up to 4 km² to accommodate an extended out-of-pit storage period or enable implementing an alternative tailings technology.

TrueNorth stated that the sand-fines layering scheme described in the application had not yet been demonstrated but that work was ongoing to evaluate the concept. As a result, TrueNorth had reconsidered its tailings management plan and proposed a segmented design for coarse sand and

thickened tailings for the OPTA. The in-pit design would remain flexible and could include separate, blended, or inter-layered deposits of coarse and thickened tails. The footprint of the pond would remain the same as in the application.

TrueNorth stated that thickened tailings properties were a key design driver for the OPTA. Learnings from the CONRAD 2001 test indicated that the material may not form a slope during deposition, and because of this uncertainty, the revised segmented design did not rely on thickened tailings slope and interlayering, as described in the application. Additionally, TrueNorth believed that there were operational benefits to retaining separate sand and fines deposits for both out-of-pit and in-pit deposition. However, the possibility of blending thickened tailings with sand was not excluded if this were to provide improved tailings management, particularly for in-pit deposition. TrueNorth asserted that separate deposits of fines and sand resulted in smaller volumes of soft material compared with combined deposits. TrueNorth argued that its revised tailings management plan, as presented at the hearing, would be technically sound.

TrueNorth committed to continued evaluation of alternative tailings management options and to the submission of a revised plan that would provide better overall performance if one could be found.

7.1.2 Views of the Interveners

OSEC expressed significant concerns with current tailings management technologies and believed a shift to extraction technologies that would allow for the creation of dry tailings was needed. It further identified uncertainty associated with the proposed thickened tailings process and the consequent potential need to resort to conventional tailings management should the thickened tailings process fail as an unresolved issue. OSEC contended that the proposed thickened tailings process would only be an incremental improvement over current tailings management schemes and had environmental impacts, such as landscape disturbance for an OPTA, potential groundwater contamination from vertical seepage from the OPTA, leachate generation, and uncertainty regarding the quality and suitability of the final reclamation landscape.

OSEC argued that should TrueNorth need to resort to a conventional tailings management strategy, the creation of a tailings pond through expansion of the OPTA would increase the risk of groundwater contamination and add to the project footprint. In addition, this change would result in increased extraction-related energy generation emissions, increased water needs, and thus an increased water withdrawal rate from the Athabasca River and increased tailings toxicity.

7.1.3 Views of the Board

The Board views TrueNorth's selection of thickened fine tailings technology as a positive development in the management of tailings in the oil sands industry. In past decision reports and approvals the Board has consistently stated its view that industry participants must continue to research and test new methods for tailings management that would achieve the objectives of

- minimization of fresh water import for make-up water,
- maximization of immediate process water recycle to increase energy efficiency,

- reduction of stored process-affected waters on site,
- elimination or reduction of containment of fluid fine tailings in external tailings pond,
- minimization and eventual elimination of long-term storage of fluid tailings in the reclamation landscape,
- creation of a trafficable landscape at mine closure, and
- facilitation of rapid progressive reclamation of disturbed areas.

The Board concludes that TrueNorth's combined process incorporating coarse tailings and thickened fine tailings will make significant advances possible in each of these target areas. Further, the Board believes that future operators should continue to develop new tailings management technologies that make advances in these target areas.

The Board is optimistic that additional advances towards solid tailings will be made through continued development of tailings management technologies. To this end, the Board directs TrueNorth to continue to monitor, evaluate, and develop solid tailings technology for implementation at its project and to report periodically to the Board on its applicability and merits. The Board also directs TrueNorth to report on its ongoing research and operational related to thickened tailings every year starting in 2003.

7.2 Design of an Out-of-Pit Tailings Area (OPTA)

7.2.1 Views of the Applicant

TrueNorth indicated that it required an OPTA to serve as the tailings storage facility for the first six years of the operation, after which tailings would be deposited in-pit. The proposed OPTA would cover approximately 8 km² and would have overall dimensions of approximately 1.8 km in a north-south direction and 4 km in an east-west direction. The height of the OPTA would range from 30 m along the south side to 50 m along the north side.

TrueNorth stated that there was a potential ore zone located along the north face of the OPTA in Mining Area 4 that would be affected by the construction of the OPTA as proposed. It maintained that this area met the economic criteria, comprising approximately 43 Mt of ore at a grade of 11.5 per cent, and said it was assessing the likelihood of recovering this resource.

TrueNorth testified that incremental pit design analysis had also been carried out to assess the viability of potential ore occurring along the eastern flank of the OPTA but that the zones proved to be too fragmented to support a viable pit extension.

TrueNorth submitted that in the unlikely event that it had to revert to its backup tailings management strategy, a somewhat larger OPTA (2 to 4 km² larger) would be required in order to create a settling area for the fines. TrueNorth also stated that an alternative waste disposal and tailings management plan had been developed to ensure that the material balance was sufficiently robust so as not to impose any limitations on the negotiated mine plan for the lease boundary area. TrueNorth stated that available options for increasing the capacity of the OPTA included expansion to the east, expansion to the southwest, and increase in the final elevation of the structure by 10 to 390 m.

TrueNorth indicated that if it were necessary to stay out-of-pit with tailings for 8 years instead of the planned 6 years, the OPTA could be made more efficient with the inclusion of a portion of the footprint within the Muskeg River drainage basin. However, TrueNorth indicated that it would not propose an extension into the basin without first completing an assessment of the long-term impacts on the surface waters. TrueNorth stated that it wished to retain some flexibility for the layout design, particularly if a more efficient design could be realized that did not change the environmental impacts.

TrueNorth explained that seepage through the containment dikes would be collected and returned to the process. TrueNorth also stated that due to the surficial deposits of up to 60 m of sandy material, subsurface seepage losses would be a design issue. The groundwater regime associated with the tailings disposal operation was complex due to the variability of materials being deposited, the time-dependent height of the facility, and the staged mining activities occurring to the west and to the north. TrueNorth's application included a hydrogeologic model that described groundwater flow in the project area. This model also described seepage from the OPTA based on inter-layering thickened tailings with coarse sand.

TrueNorth stated that the results of seepage analysis indicated that a perimeter pumping well system would be required around the OPTA to prevent seepage from the OPTA from contaminating the groundwater. TrueNorth included preliminary plans of the interceptor well system in its application and believed that the interceptor system was capable of capturing the majority of seepage from the OPTA. It advised that a more detailed plan of tailings management and the design of the OPTA would be submitted at a later date.

TrueNorth posited that the flow of groundwater in the OPTA area was north and then northwest and argued that any seepage bypassing the wells would not impact the Muskeg River basin to the south or the part of the McClelland Lake Wetland Complex (MLWC) that would be protected as a result of the revised IRP. The pumping wells would lower the local water table and acts as sinks, capturing the seepage, with the water being recycled back to the plant or back into the tailings facility. TrueNorth further noted that the seepage analysis and protection measures would need to be reviewed as a result of the new tailings management plan.

7.2.2 Views of the Interveners

OSEC noted that TrueNorth had proposed thickened tailings, but commented that this technology was unproven. OSEC believed that given the uncertainty of the thickened tailings process, True North had not adequately assessed the environmental impacts, such as increased risk of groundwater contamination, that would be associated with a tailings pond.

7.2.3 Views of the Board

Informational Letter (IL) 96-7: EUB/AEP Memorandum of Understanding on the Regulation of Oil Sands Developments outlines in general terms the responsibilities of the Board and Alberta Environment Dam Safety Branch with respect to approvals for tailings ponds. Consistent with that, the Board believes that its primary responsibility when approving applications is to address the conceptual planning and preliminary engineering design of tailings ponds.

The Dam Safety Accord issued as *IL 94-19* more precisely defines the roles and responsibilities of the two agencies. As set out in the accord, the role of the EUB with respect to new tailings ponds included in project applications is to ensure that

- structures are located such that resource sterilization is minimized,
- the facilities are needed and sized to adequately service the proposed project,
- the site is appropriate considering logistics, as well as environmental acceptability, and
- the proposed design meets the requirements for worker and public safety and for the integrity of the project.

The Board notes that TrueNorth has identified a potential sterilization of oil sands if the OPTA is constructed in the proposed location and that TrueNorth is evaluating possible adjustments to the design and location that would allow recovery of that resource. The Board believes that it is likely that TrueNorth will be able to complete a new design for the OPTA that will allow recovery of the nearby mineable resources currently identified. In that regard, the Board directs TrueNorth to submit a report evaluating design and relocation options that would avoid sterilization of mineable resources by construction of the OPTA. This report would include TrueNorth's most up-to-date interpretation of the potential mineability of the oil sands resources near or under the proposed OPTA.

The Board understands that external tailings ponds are still required for oil sands mining projects to allow for sufficient space to be opened in-pit for the placement of tailings. However, it is not clear that the proposed pond is sized to adequately service the project. TrueNorth's recently proposed changes to the conceptual tailings deposition plan, from a plan based on interlayering of thickened and coarse tailings deposits to a plan based on segregation of coarse and thickened tailings deposits, raise questions regarding the adequacy of the storage facility. Additionally, considerable uncertainty regarding the total OPTA storage requirements will continue to exist until the plan for mining and dike construction at the FHOSP/Syncrude Aurora North lease boundary is finalized. The Board directs TrueNorth to complete an updated assessment of the total storage requirements and the proposed construction schedule for the OPTA and submit this assessment to the Board for approval prior to commencement of construction of the starter dike.

The Board accepts that the site chosen for the OPTA is suitable. However, relatively minor changes to the location may be necessary to prevent sterilization of mineable resources and allow for better overall design options based on an optimized shape for the OPTA. The Board recognizes that changes to the location of the OPTA may result in unacceptable environmental effects. Therefore, the Board directs TrueNorth to provide a report that assesses the benefits of any changes to the location of the OPTA from the points of view of resource conservation and operational efficiency, together with an assessment of the potential environmental impacts associated with the changes to location.

With respect to its review of the preliminary engineering design of the OPTA, the Board believes the slopes and overall height of the structure as proposed are generally reasonable, given the amount of information currently available about the site-specific foundation conditions. The Board also notes that once more detailed information about the site becomes available, TrueNorth will be required to submit a satisfactory detailed geotechnical design for the OPTA to the Alberta Environment Dam Safety Branch to obtain a licence for the structure prior to impoundment of any fluids within the dam.

TrueNorth's recent proposal involving the segregation of the thickened and coarse tailings within the OPTA was not accompanied by any updates or revisions to its seepage or groundwater modelling. This raises the question of whether the seepage impacts can be mitigated by TrueNorth's chosen methodology. Also, there is continued uncertainty regarding the ultimate location, footprint size, and height of the OPTA and a lack of groundwater modelling designed to assess the possible scenarios. Further, the Board has not been presented with a sufficient degree of site-specific data regarding seepage characteristics of the foundation materials underlying the proposed OPTA or information related to the anticipated design and operation of the proposed perimeter well system.

With respect to the perimeter well system, the Board understands that the effects of seepage from the OPTA will be mitigated by installing and operating a perimeter interceptor well system that would be designed to capture almost all of the process-affected water expected to seep from the OPTA. The Board needs further information on well spacing and purposed capture zone of each well to understand the ability of the perimeter well system to capture the seepage waters to the extent reported. Therefore, prior to commencement of OPTA construction, the Board directs TrueNorth to submit the results of additional seepage and groundwater modelling, based on hydrogeological parameters obtained from statistically adequate site-specific tests of the OPTA foundation materials, to demonstrate the effectiveness of the proposed perimeter well system. This report will also contain an assessment of contingency measures that TrueNorth could employ if it became apparent that the perimeter well system was not as effective as envisioned.

If TrueNorth is not able to satisfy the Board respecting the effectiveness of the perimeter well system and contingency measures, the Board will direct TrueNorth to install a seepage barrier or pond liner.

Given TrueNorth's proposed project schedule and the time it will take for the Board to review the information identified above, the Board believes that it will have to receive all of the assessments and reports identified in this section of the decision report by June 30, 2003.

8 BITUMEN EXTRACTION

8.1 Views of the Applicant

TrueNorth described the first step in the extraction process as slurry preparation, whereby the ore would be mixed with warm water and then pumped via a hydrotransport pipeline to the extraction plant. The oil sands slurry, conditioned in the hydrotransport pipeline, would be delivered to a low energy extraction (LEE) process operating at approximately 25°C. The resulting froth would be sent for further processing in the froth treatment plant, where residual water and solids would be removed from the bitumen product.

TrueNorth stated that the FHOSP extraction process would include two extraction trains, the first operational in 2005 and the second in 2008. TrueNorth stated that slurry preparation, oil sands hydrotransport, and primary extraction process are based upon the LEE process technology licensed from Syncrude and used in the Aurora North Mine. It stated that its primary extraction

process had been chosen to optimize energy efficiency and that it would continue to include improvements developed at the Aurora site into its final design.

TrueNorth noted that Syncrude's extraction operations had been in existence for three years and that Syncrude continued to work on resolving the issues that inevitably arise when a prototype process is introduced. TrueNorth believed that Syncrude's lead of several years would mean that some of the larger issues would be addressed before its processing facility was built. It said that design improvements that would be employed to resolve Syncrude Aurora shortcomings included modifications to the slurry preparation facility to overcome constraints on some ore qualities, increased hydrotransport pipeline distance, and improvement to the functionality of the primary recovery and secondary flotation circuit. TrueNorth indicated that should these design changes be insufficient, further contingencies could be implemented, including chemical and air addition, ore blending, and increased operating temperature.

TrueNorth stated that it had developed a new froth treatment technology using a high temperature paraffinic solvent process, which rejects some of the asphaltenes in the froth. TrueNorth would propose to reject between 5 and 10 per cent asphaltenes by weight. TrueNorth's focus was to produce a bitumen product that would meet pipeline specifications, would not restrict downstream marketing opportunities, and would not restrict upgrading of the bitumen product.

TrueNorth stated that solvent would be recovered from the froth treatment tailings in a tailings solvent recovery unit (TSRU) prior to discharge to the tailings pond. It committed to annual average solvent losses to the tailings pond of not more than 4 volumes per 1000 volumes of whole bitumen produced, including start-up, shutdown, and upset conditions, as well as all losses from site. TrueNorth committed not to release untreated froth tailings to the tailings area.

TrueNorth indicated that if the Board were to set a production limit for its approval, it would request a maximum production rate not less than 40 000 m³/d. The increase in capacity could only be achieved after the second production train had demonstrated its capacity to exceed design criteria, which at the earliest would be 2009, but mostly likely 2010. TrueNorth believed that both the mine plan and waste material balance plan would not change as result of the throughput increase, only accelerate. A production increase of 33 per cent would increase mine waste production by a corresponding 33 per cent. TrueNorth stated that its in-pit tailings disposal plan would benefit from this acceleration, with a disposal area being created and released at a rate 33 per cent faster than the base case. A 33 per cent increase in production would create a corresponding increase in project emissions and contributions to the regional airshed. There would also be a need for a corresponding increase in water withdrawal from the river.

8.2 Views of the Interveners

OSEC stated that TrueNorth's approach to extraction technology had been to select the LEE process and to seek to resolve design flaws currently being experienced by Syncrude. OSEC stated that Syncrude had not perfected its LEE process. In its April 2002 *Annual Report to the Board*, Syncrude's Aurora Project reported that with an average feed grade of 12.0 per cent, Aurora only achieved an overall recovery of 81.2 per cent. OSEC noted that this was significantly less than the 93 per cent recovery rate required as a condition of Syncrude's Aurora Project Approval. Furthermore, it stated that Syncrude had had considerable difficulties in

processing transition ores, with target recoveries obtained for only a small portion of available ore types.

OSEC was concerned about project-specific and cumulative impacts associated with current extraction technologies and believed that a step-by-step, rather than incremental, improvement in technology was warranted. It believed that the uncertainty associated with the LEE process raised the spectre of the potential need for TrueNorth to resort to a hot/warm water and/or caustic process.

OSEC recommended that the application be denied to the extent that it relied upon a low-energy extraction technology and a thickened tailings process, both of which were unproven. However, in the event of an approval, it proposed a conditional approval that would not allow construction until the LEE process had successfully achieved the resource recovery and energy efficiency targets specified in the Syncrude Aurora Project Approval No. 8250, as well met or exceeded the resource recovery and energy efficiency targets outlined in the same approval.

OSEC also recommended that TrueNorth be required to build a demonstration plant at an appropriate scale to allow a low-impact extraction/tailings process to be tested for commercial potential in the Athabasca oil sands. This would entail demonstrating an energy-efficient, water-efficient extraction technology that would avoid the need for a large tailings impoundment, allow for direct placement of tailings and progressive reclamation, and result in significantly less tailings leachate generation.

OSEC believed that the purpose of the TrueNorth environmental impact assessment (EIA) was to assess the incremental effects that might result from the FHOSP in the context of the cumulative effects of oil sands and other resource development on the environment and communities in the oil sands area of northeastern Alberta. OSEC testified that TrueNorth's EIA was inaccurate and incomplete because it assumed production of 30 000 m³/d, rather than the 40 000 m³/d for which it sought approval. OSEC believed that the potential impacts from a 33 per cent increase in production included significant increased mine waste, nitrogen oxides (NO_x), and sulphur oxides (SO_x) emissions, greenhouse gas emissions, and water withdrawal rates from the Athabasca River. Therefore, it concluded that TrueNorth's assessment of potential impacts was subject to significant uncertainty and unreliability. OSEC concluded that the EIA was not representative of the applied-for project. OSEC recommended that any request for a production increase to 40 000 m³/d as a result of project optimization should require an amendment to any Board approval and an EIA.

8.3 Views of the Board

The Board encourages companies to use new and innovative technology that will maximize resource recovery, reduce energy and water consumption, and enhance progressive reclamation strategies. The Board believes that TrueNorth is trying to meet these goals by its choice of the LEE process and thickeners. The Board understands that the LEE process is still being developed at the Syncrude Aurora mine. It also understands that TrueNorth will be applying any learning from the Syncrude site to its project. The Board directs TrueNorth to submit an annual update on its extraction process starting February 28, 2003. The update will include any proposed changes and their impacts on the project.

The Board believes that the LEE process or a modified LEE process will obtain acceptable extraction recoveries, which will enable TrueNorth to meet the operating criteria. Above, in Section 6, the Board decided that TrueNorth will be required to meet the operating criteria. Therefore, the Board is not prepared to set a different recovery requirement, as suggested by OSEC. The Board notes that noncompliance with the operating criteria is handled through an enforcement ladder, as specified in *ID 2001-7*. If the LEE process is causing TrueNorth continual difficulty in meeting operating criteria, the Board may require further evaluation and justification of the continued applicability of the LEE prior to the construction and operation of train 2.

The Board believes that the operating criteria preclude the need for specific production limits for resource recovery. The Board notes that the operating criteria only relate to mining and extraction resource recovery and that there are other aspects of the project falling outside the operating criteria requirements that will need to be evaluated prior to production increases.

The Board notes that TrueNorth will be building a paraffinic solvent extraction process, which will result in asphaltene precipitation that is then disposed. The Board recognizes the need for this process to ensure product quality and improve marketability. The Board also believes that the rejection of asphaltenes is a possible waste of a resource, and it directs that the amount of asphaltenes rejection be limited to 10 per cent by weight.

The Board accepts TrueNorth's commitment and directs TrueNorth to limit solvent loss from the site to not more than four volumes per thousand volumes of whole bitumen production; the Board will condition the approval appropriately. The Board notes that the solvent losses include the entire site, such as losses through vents as well as TSRU losses. The Board also accepts TrueNorth commitment and directs TrueNorth to have no untreated froth tailings discharged to the tailings area; the Board will condition the approval appropriately.

9 WATER MANAGEMENT

9.1 Basal Aquifer

9.1.1 Views of the Applicant

TrueNorth indicated that a bitumen-free zone of water-saturated sand, referred to as the basal aquifer, existed within the McMurray Formation beneath some of the ore deposit. It stated that the basal aquifer had relatively high salinity beneath the western portion of the lease (~ 50 000 mg/L total dissolved solid) and low salinity under the eastern portion (< 1500 mg/L total dissolved solids). TrueNorth indicated that it must depressurize this zone to safely mine the overlying ore. As such it investigated three methods of managing this water:

- use it in the process,
- reinject into basal water sands at another location, and
- treat and release to the Athabasca River.

TrueNorth stated that basal McMurray water from the western portion of its project (Lease 5) was unsuitable for use in the process without treatment. However, it was TrueNorth's position that desalinization of this water would be energy intensive and would result in increased

emissions and the need for a large salt landfill. TrueNorth did not propose discharging this high-salinity water to the Athabasca River, but rather proposed reinjecting the water east of the mine pits. TrueNorth described the basal aquifer in the eastern portion of its project as meeting AENV's definition of usable groundwater, with a total dissolved solids content less than 4000 mg/L.

TrueNorth maintained that although EUB *Guide 51: Injection and Disposal Wells* prohibits disposal into usable aquifers, it also contemplates tests and limitations beyond those discussed in the guide. TrueNorth indicated that a requirement to treat and use saline basal aquifer water restricting its ability to reinject the water would place the entire project in jeopardy. While TrueNorth stated that it preferred an exemption to the requirements of *Guide 51*, it committed to investigate the deeper Methy Formation as a *Guide 51* compliant disposal zone.

TrueNorth believed that releasing low-salinity basal aquifer water to the Athabasca River after treatment for hydrogen sulphide (H₂S) may be the preferable management option, as accumulating this water would increase chloride concentrations in the recycle water that would eventually return to the environment via end-pit lake releases and mine seepage. However, TrueNorth agreed to undertake stakeholder consultation prior to pursuing this option.

TrueNorth deemed all three management techniques feasible for the low salinity basal water and stated that it would like to have access to all of these options to allow flexibility in its future operations.

9.1.2 Views of the Interveners

Alberta stated that injection of high-salinity basal aquifer water into the fresh basal aquifer on the east side of the project was considered contamination of an aquifer. It stated that TrueNorth should comply with *Guide 51*. In Alberta's view, TrueNorth's options included treatment of highly saline basal water with disposal of the concentrated brine to a *Guide 51* compliant zone, deep well disposal of the full volumes to a *Guide 51* compliant zone, or production concentrated solids and disposal in an acceptable landfill.

Alberta stated that it would prefer TrueNorth to treat and use fresh basal aquifer water, thereby reducing the water requirement from the Athabasca River. Alberta took this view even though the discharge would likely meet guidelines for water quality if provision for a mixing zone were included.

Alberta stated that it might include conditions in any EPEA approval that might be issued for the project requiring TrueNorth to re-evaluate and modify its water and wastewater management for the project. It also recommended that the Board should also consider including such conditions in its approval.

9.1.3 Views of the Board

The Board believes that *Guide 51: A Landowner's Guide to Drilling Waste Disposal from Oil and Gas Wells* provides direction to all applicants on what is acceptable for disposal of nonusable water. The Board notes that this guide also supports the requirements of Alberta

Environment, which prohibit the contamination of a usable water aquifer. It recognizes that each application must be considered on its own merits, but the Board has always considered the protection of usable water zones to be the pre-eminent criterion when considering disposal applications. The Board is not prepared to deviate from this policy and practice in this case. Therefore, the Board denies TrueNorth's request to dispose the high total dissolved solids (TDS) waters into the usable basal aquifer and it directs TrueNorth to submit for approval a new water management plan that will incorporate an alternative proposal for management of the TDS water. This plan could utilize the Methy as a suitable disposal zone or any other disposal options that maybe technically and economically feasible and acceptable to TrueNorth and the Board.

9.2 Water Withdrawal

9.2.1 Views of the Applicant

TrueNorth indicated in its application that it would require a peak withdrawal rate of 6000 m³/h, but under normal operating conditions it would only need 1600 m³/h.

At the hearing, TrueNorth stated that the FHOSP would not require any water from the Athabasca River until at least a year after the in-stream flow work was completed by the Cumulative Environmental Management Association (CEMA). TrueNorth said that it would continue to be an active member of this working group. It requested a water withdrawal rate of 45.3 million m³ per year. This number was determined by assuming a water-saturated tailings sand deposit, a nonlayered fine tailings deposit with 37 per cent solids, and low mine site runoff because of dry conditions. TrueNorth expected that under normal operating conditions, the Athabasca River water makeup would be 29.8 million m³ per year.

9.2.2 Views of the Interveners

Views of OSEC

OSEC recommended that TrueNorth's operational water use be restricted to a licensed withdrawal rate of 1600 m³/h, with peak withdrawals of 6000 m³/h permitted only when necessary.

Views of Alberta

Alberta believed that water management was an important aspect of the proposed project and that should the project proceed, TrueNorth would need to carefully address all water management issues and adapt water management plans throughout the duration of the project. Alberta noted that water management plans originally proposed in the EIA were unlikely to meet the objectives of the revised IRP. A more intensive and flexible form of water management would be needed for this project than for most of the existing oil sands mines in the region. Alberta indicated that TrueNorth had agreed with this assessment and had proposed that an ongoing process of research, planning, and adaptive water management would be implemented to achieve the IRP objectives.

Alberta stated that water for bitumen processing is generally available from the Athabasca River; however, a contingency supply may be needed during low-flow periods. Alberta stated that

consideration of cumulative impacts leads to the conclusion that there could, potentially, be impacts on the aquatic environment of the river during low-flow periods, such as in mid-winter.

Alberta indicated the CEMA water working group is assessing the need for low-flow cutoff levels for the Athabasca River, which would apply to the existing mines and to the FHOSP. Therefore, in Alberta's view, TrueNorth must have a contingency plan to allow for temporary storage of water or temporary diversion of water from another source during low-flow periods.

Alberta noted TrueNorth's commitment to CEMA's development of site-specific water quality objectives for the lower Athabasca River and to management of waste waters so that water quality guidelines and objectives were achieved.

Alberta said it would condition any EPEA or Water Act approval to require TrueNorth to submit a revised water management plan that would ensure that the environmental protection goals in the IRP were met. Alberta recommended that the Board consider including such conditions in its approvals.

9.2.3 Views of the Board

The Board recognizes Alberta's concern that there may be impacts on the aquatic environment of the Athabasca River during low-flow periods. The Board recommends that Alberta consider conditioning its approval to require TrueNorth to evaluate the option of storage of water on site or temporary diversion of water from another source during low-flow periods in the Athabasca River. TrueNorth is reminded that the chosen option will still require the appropriate approvals from Alberta and the Board.

The Board recommends that Alberta consider options in its approvals that would limit the licensed amount of water withdrawal from the Athabasca River but still allow TrueNorth some flexibility during commissioning of extraction trains 1 and 2.

The Board believes that water management is an important part of any oil sands project. The Board agrees with Alberta's conclusion that the water management plans proposed in the EIA would not likely meet the objectives of the revised IRP. The Board notes that in the future a number of issues will be resolved that would change or impact the water balance and water management plans. These are

- detailed design of the new tailings management plan,
- detailed evaluation and design of seepage control from the OPTA,
- treatment or management of basal aquifer water,
- in-stream flow needs and need for on-site temporary water storage, and
- implementation of recommendations from the MLWC sustainability committee.

As each of these issues is resolved, the Board directs TrueNorth to submit for approval a new water management plan, including plant and site-wide water balances, an evaluation of possible environmental impacts, and an evaluation of impacts on the mine plan.

10 MCCLELLAND LAKE WETLAND COMPLEX

10.1 Views of the Applicant

TrueNorth described the McClelland Lake Wetland Complex (MLWC) as the collection of contiguous wetland types on the southwest side of McClelland Lake, including a large patterned fen. TrueNorth stated that the proposed mine footprint would directly affect 49 per cent of the McClelland Lake wetland and approximately 45 per cent of the fen.

TrueNorth understood that its proposal to mine a portion of the MLWC did not comply with the 1996 Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan's specific prohibition against open pit mining in the area. It therefore applied to the Alberta government for a relaxation of the guidelines. In support of its request, TrueNorth stated that the oil resource underlying the western portion of the wetland was large, previously unknown, and integral to the economic success of its project. It also provided a study that it said demonstrated that the wetland complex was "representative" rather than "unique." The Alberta government amended the IRP to remove the prohibition against surface mining in the MLWC on June 14, 2002. The amendments also imposed a requirement to protect the unmined portion of the wetland complex.

TrueNorth's EIA and its subsequent refinements in response to supplemental questions were submitted to the EUB before the government amended the IRP. The EIA indicated that changes in the water table associated with mine dewatering would first elevate and then lower the water table in the unmined eastern portion of the wetland. Those changes would exceed the range of elevation changes known to be tolerated by certain peat-forming bryophyte species chosen as indicators of the biological response of the wetland. The EIA predicted that those species would die and peat production would cease. TrueNorth stated in its application that it would attempt to stabilize the level of McClelland Lake by constructing a weir. It predicted only minor changes in the level of McClelland Lake with negligible impact.

TrueNorth indicated that it would intercept process-affected runoff from out-of-pit tailings areas. Nevertheless, water quality in the unmined portion of the wetland and McClelland Lake would decline due to the combined effects of overburden dewatering, seepage from OPTA, and the outflow from end-pit lakes. The concentrations of some base cations and conductivity would be elevated beyond the range of values observed for the indicator bryophyte species. The EIA predicted these bryophyte and other peat-forming species would die and peat production would cease. A number of organic compounds, including benzo (a) anthracenes and benzo (a) pyrenes, mono- and polyacrylamide and naphthenic acid, were expected to concentrate downgradient. TrueNorth stated the effects of these organics on wetland vegetation are unknown.

TrueNorth predicted that cations and conductivity would decline in the future and water levels would stabilize to acceptable levels, allowing peat-forming bryophytes to re-establish themselves in parts of the unmined eastern portion of the wetland. The botanical characteristics of this community would likely differ from baseline conditions.

At the hearing, TrueNorth withdrew the portion of its EIA describing the project's impacts to the MLWC and asked the Board to consider instead a plan developed in consultation with the Fort McKay Industry Relations Committee. The McClelland Lake Wetland Complex Sustainability

Plan called for the creation of a committee of regulators and stakeholders to develop a management strategy to sustain the unmined eastern portion of the wetland and thereby satisfy the requirements of the amended IRP. The proposed committee would agree on a set of indicators and objectives that would then be used to design baseline monitoring, assess potential mitigation plans, and eventually monitor their effectiveness.

Key components of the plan include

- reducing seepage to the MLWC through installation of OPTA perimeter wells;
- minimizing interaction of natural groundwater flow with reclamation deposits through in-pit barrier wall and capping materials;
- managing overburden water levels in the part of the MLWC not directly affected so that the water table would be adequately maintained;
- directing overburden dewatering water to the Athabasca River, if necessary; and
- directing and/or treating initial end-pit lake release to the Athabasca River, if necessary.

TrueNorth believed that water levels in the unmined portion of the wetland could be maintained by pumping mine dewatering water or McClelland Lake water into ditches at the west end of the remaining wetland and releasing it into the surface water or the surficial aquifer to compensate for mine-induced water deficits. TrueNorth was confident that the sustainability plan that accommodated and was responsive to natural variability could be effective in maintaining the ecological diversity and function, as required by the amended IRP.

TrueNorth also recognized the need for a long-term commitment to wetland research. To this end, it had established a partnership with Alberta Pacific and Ducks Unlimited. It recommended and received placement of a temporary protective notation on the Thickwood Hills wetland, west of Fort McMurray, to facilitate wetland research. TrueNorth also committed to a five-year research program led by the University of Alberta that would generate information in support of its wetland management, impact mitigation efforts, and contribute to its understanding of wetlands in the region.

TrueNorth believed that the Alberta government executive council's decision to amend the IRP released the Board from its obligation to decide whether it was in the public interest to destroy a portion of the MLWC in order to recover the bitumen. TrueNorth believed that that decision had been taken by the government and that the Board was bound to follow that policy direction. It believed that the only decision facing the board with respect to the wetland was whether the mitigation proposed by TrueNorth was suitable.

10.2 Views of the Interveners

Views of OSEC

OSEC challenged TrueNorth's assertion that the wetland complex was merely "representative" for many of the same reasons put forward by other interveners: the flawed sampling methodology of the company's landform study; the unusual association between the fen and a large lake; and the exceptional visual impression made by this fen. OSEC noted that none of the eight larger patterned fens identified by TrueNorth had been examined in the field, making it impossible to verify the company's inference that these were also rich fens that could reasonably be compared to the MLWC. OSEC stated that any reasonable application of the criteria that had been suggested to compare this fen to others would lead to the conclusion that it was an uncommon and sensitive wetland. OSEC noted that the IRP still classified the MLWC as provincially significant.

OSEC stated that the real significance of the wetland complex could only be appreciated in a regional context. It pointed out that the MLWC was a large, pristine wetland complex in an area of intense development. It described the watershed as one of a small and dwindling number in Alberta not currently affected by development in greater than 50 per cent of its area. It noted that McClelland Lake was one of only three lakes used as stops on the migratory routes for birds flying to the Peace-Athabasca Delta and was an important spring and fall waterfowl staging area. It was also important as a nesting site for bald eagles and sandhill cranes and home to a number of rare plant species. OSEC said that protection for ecosystems like the MLWC was vital to the long-term ecological integrity of the area, adding that considerable work was needed to understand the biodiversity of the complex and how it functioned from an ecological perspective within the regional context.

OSEC described TrueNorth's "sustainability plan" as a conceptual plan based on an inadequate understanding of the ecological diversity and function of the wetland complex and lacking sufficient detail to allow the Board to determine whether it would work. It stated that a decision to proceed in the face of such uncertainty would violate the precautionary principle and undermine CEMA's efforts to design an effective environmental management system for the region. OSEC said the Alberta government's stated belief that it would be possible for TrueNorth to maintain the natural diversity and function of a portion of the fen lacked credibility because it did not know how the conceptual plan would be implemented or whether it would work. OSEC believed that the burden of proof rested with the proponent.

OSEC believed that the project as described would certainly destroy half of the fen and might well destroy the remainder and have severe impacts on McClelland Lake. OSEC believed that it would not be in the public interest to destroy all or part of the fen to recover an estimated one billion barrels of bitumen. It noted that this amount represented a very small fraction of the increasing tally of bitumen to be recovered from existing and approved surface mines and in situ projects. OSEC asked the Board not to permit mining in the MLWC. It also asked the Board to condition any approval for the remainder of the mine to require that TrueNorth develop an environmental management plan to prevent indirect effects on the MLWC before the project would be allowed to proceed. OSEC believed that the plan should be developed with stakeholder participation and in sufficient detail to provide the Board confidence that it would succeed.

Views of CFUW and OSEC

The Alberta Council of the Canadian Federation of University Women (CFUW) stated that the MLWC has been recognized as an exceptional site worthy of protection since at least 1985, when the Provincial Parks Service placed a protective notion on the Fort Hills area.

OSEC/CFUW submitted that TrueNorth had not discharged its obligation to demonstrate that its development was consistent with the intent of the guidelines and IRP. For example, the EIA predicted that the fen would be destroyed in the mining area and that there was low confidence in the plan to restore a wetland in the mine area. OSEC/CFUW said that there was no known technology to recreate a fen and no technology had been described in the application. The EIA and supplemental responses categorized the effects on the fen both indirect and direct as Class 1, meaning the sustainability of the resource was threatened.

OSEC/CFUW noted that the "sustainability plan" was presented as part of a June 2002 agreement between TrueNorth and the Fort McKay First Nation and not as a separate document. They questioned the importance of this document. Moreover, they said that TrueNorth had filed a list of contingencies at the hearing. OSEC described this approach to presenting evidence on one of the major issues in the application as cavalier.

OSEC/CFUW believed that it would be unconscionable to allow the MLWC to be the sacrificial test case for TrueNorth's sustainability plan, which it said was more akin to a statement of good intentions than a realistic plan. CFUW said that the Board should not accept promises in place of adequate baseline studies and an environmental assessment. It said that TrueNorth should be required to gather adequate baseline data and develop an environmental assessment in the years before TrueNorth plans to mine the area. This would allow AENV and the Board to make an informed decision as to whether the company could meet its obligations under the amended integrated resource plan.

OSEC/CFUW believed that TrueNorth had not demonstrated that it could comply with the requirements of the amended IRP. They noted that Alberta had requested a detailed plan, detailed baseline studies, a new water management plan, baseline data for waterfowl, better baseline data on wildlife species of concern, and further work on the rare plant community. OSEC/CFUW said that the burden of proof was on the proponent to demonstrate that there would be no significant effects; it was not the interveners' responsibility to show that there would be impacts.

OSEC/CFUW submitted that purpose of the IRP was clearly stated in its preface, which stated that the IRP was a policy for public lands and resources. The IRP was a guide, not a regulatory mechanism. They pointed out that the IRP stated: "Energy resource decisions are subject to the application of regulatory approval processes under the jurisdiction of the Minister of Energy. This plan may influence regulatory decisions, but will not result in the categorical approval or rejection of energy proposals." It also stated: "This plan has no legal status." OSEC/CFUW concluded from these statements that while mining in a portion of the fen was no longer specifically prohibited, neither was it automatically allowed, and they stated that the Board retained its overriding jurisdiction to consider the public interest based on the facts of this case.

The CFUW argued that the FHOSP should not be approved.

Views of the AWA

The Alberta Wilderness Association (AWA) said that the wetland complex should be protected because it included three interlinked environmentally significant areas deemed by various investigators to be provincially significant: McClelland Lake, the sinkhole lakes, and the patterned fen. In support of this, the AWA stated the following:

- McClelland Lake was recognized as an important waterfowl staging area and redhead duck nesting area.
- The twelve sinkhole lakes associated with the wetland were examples of a landform rare in Alberta.
- The fen was home to rare vascular and nonvascular plants and displayed a complex reticulate pattern qualitatively distinct from the simple parallel structures found in other patterned fens.
- Whooping cranes had been observed on the fen on a number of occasions.

Finally, the AWA suggested that this endangered species may use the fen as a staging area on its migrations to and from its breeding territory in Wood Buffalo National Park. It recommended that the wetland complex be monitored during the spring and fall migrations to confirm or deny this.

The AWA noted there are at least 10 provincially rare species of bryophytes and 4 provincially rare vascular plant species already found in the MLWC. It also noted that 205 bird species have been recorded within the vicinity of the MLWC, and about 57 per cent of those species stayed to breed.

The AWA contended that TrueNorth had failed to establish that the MLWC was representative, rather than unique. In particular, the AWA said that the landform study prepared in support of TrueNorth's request for an amendment to the IRP was an entirely inadequate basis for comparison because it failed to deal with biodiversity, rare species, and aesthetics. With respect to aesthetics, the AWA described the fen complex as a spectacular world-class site. It believed that mining half of the wetland complex would destroy its aesthetic value.

The AWA said that TrueNorth had failed to explain how it could maintain the ecological integrity of a portion of the fen while mining the rest. AWA was not prepared to accept as an article of faith that such mitigation was possible, and it asked the Board not to allow TrueNorth to experiment with the MLWC. It believed that the MLWC was a priceless natural heritage legacy that belonged to all Albertans and all Canadians. The AWA urged the Board to adopt the position that the general public's long-term interests would be best served by having the MLWC officially designated as a protected area for future generations.

Views of Dr. Diana Horton

Dr. Diana Horton described the wetland complex as one of the largest and most spectacular patterned fens in the province, rivaling the natural beauty of sites in the Canadian Rockies. She rejected TrueNorth's claim that the MLWC was merely representative, rather than unique, noting that it was larger than 91 per cent of patterned fens in the province, displayed an unusual reticulated pattern, and was associated with a large lake. She said that all of these features made it exceptional. Dr. Horton said the landform study that TrueNorth presented in support of its assertion that the fen was merely representative was methodologically flawed and its conclusions insupportable.

Dr. Horton said that removing half of the fen would destroy its ecological integrity and aesthetic value. She asked the Board to deny TrueNorth's application or, alternatively, to prohibit mining in the entire McClelland Lake drainage basin.

Views of WBFN

The Wood Buffalo First Nation (WBFN) described its long familiarity with the Fort Hills area and observed that moose and game birds have declined over time. It said the fen should not be mined because it would damage wildlife and the trappers that depend on wildlife. It expressed doubt about the TrueNorth's plans to mitigate impacts to the fen and urged the Board to require further study.

Views of Alberta

Alberta recognized that the MLWC includes a nutrient-rich fen with a well-developed pattern of strings and pools, rare plants, and sensitive wildlife species. It agreed with TrueNorth's predictions that mining a portion of the fen in the manner described in the EIA would directly disturb the mined portion and indirectly damage the unmined portion by altering water levels and elevating the concentrations of certain chemicals. It agreed that McClelland Lake would be affected by the anticipated decline in lake level during the interval between mine dewatering and the discharge of runoff from the planned end-pit lake. It disagreed with TrueNorth's conclusion that changes in lake water quality would have no impact on aquatic life, stating that long-term changes in phytoplankton, zooplankton, and the macrophyte community were likely.

Alberta stated that the amendment to the IRP was a critical component guiding its view of the proposed project. It also noted that the June 2002 amendment to allow mining in the MLWC came with very clear conditions and expectations. Alberta noted that the IRP stated that surface mining within the Athabasca Clearwater Resource Management Area (RMA) shall maintain the water table, water chemistry, and water flow within limits as indicated by natural fluctuations to maintain ecosystem diversity and functions of the MLWC where surface mining was not allowed.

The amendment provided for a "no-surface-access zone" (see Figure 2), in which surface mining, in situ oil sands activities, and any other activities that would potentially negatively impact the fen ecosystems would not be permitted. Activities such as monitoring of impacts due to adjacent

land use would be permitted. Alberta took the position that any adverse impact to the ecosystem diversity and function of the MLWC no-surface-access zone would be unacceptable.

Alberta explained that the area between any proposed mining activity located in the fen and the boundary to the no surface access zone would be managed as a transition zone, which would function as a buffer and be available for development of structures to ensure that the objectives of the proposed IRP were met in regard to the no-surface-access zone. The objective of the transition zone was also to ensure as little disruption as possible to the fen in this area.

Alberta maintained that it was technically feasible to mine a portion of the fen while maintaining the ecosystem diversity and function of the unmined portion and McClelland Lake, as TrueNorth proposed. However, it said that developing a plan to make the mine compatible with the amended IRP would require considerable work, beginning with further baseline investigations to verify assumptions about groundwater flow patterns and to bolster understanding of the predevelopment physical and biological state of the fen and McClelland Lake. Research and consultation would also be required to establish site-specific target values for water quantity and quality suitable for sustaining biota in the fen and lake. TrueNorth's plans would have to be adaptable in case outcomes departed from objectives due to considerable uncertainty about postdevelopment hydrology.

Alberta supported the agreements forged between Aboriginal stakeholders and TrueNorth, as the agreements included conditions in furtherance of TrueNorth meeting the requirements of the IRP amendment. It noted that these agreements called for the establishment of a multistakeholder team to address the issue of maintaining the fen and lake.

Alberta requested that the Board consider as a condition of its approval that TrueNorth be required to immediately initiate a monitoring program, fully engaging stakeholders in an open forum to establish the current conditions of the fen and lake. Alberta believed this monitoring program would support the development of the physical and biological performance criteria established through the use of sound scientific research.

Alberta also requested that the Board consider as a condition to its approval that TrueNorth be required to develop water management models to evaluate the effectiveness of potential mitigation, subsurface water flows, water source areas, and water quality and quantity in conjunction with a multistakeholder team over the period of years leading to resource extraction.

Alberta's view in all matters regarding the interpretation of the IRP amendment was that the objective of maintaining the unmined portion of the ecosystem must take precedence. Mining activities would be contingent on the development of a scientifically defensible plan to maintain the no-surface-access zone of the wetland complex within to-be-established performance measures. Alberta stated that TrueNorth must be able to demonstrate that the ecosystem diversity and function in the no-surface access portion of the fen could be maintained before mining could occur and that this must be demonstrated to stakeholders and regulators through sound scientific practice.

Alberta said it would condition any EPEA or Water Act approvals to require TrueNorth to develop and submit its mitigation plans prior to any disturbance of the fen. It also recommended

that the Board consider including such conditions in its approval, should the Board find the project in the public interest.

Alberta noted that several listed water bird species were known to frequent McClelland Lake. It said that the fen was home to a number of species of concern, including the Canadian toad, sandhill crane, yellow rail, black tern, and short-eared owl. Whooping cranes and caribou had also been sited. Alberta stated that should the project go ahead, it would require TrueNorth to submit better baseline data and long-term monitoring plans for species of concern before any development proceeded in the fen.

10.3 Views of the Board

The Board will address the matter of its jurisdiction to approve or deny mining in the MLWC, in light of the very recent amendment of the IRP, before dealing with the assessment of impacts to the wetland complex.

TrueNorth argued that the 2002 amendment to the IRP, which removed the prohibition of oil sands mining from the fen, is an expression of provincial policy authorized by cabinet and as such represents the will of elected officials. TrueNorth said that the Board must therefore comply with that will.

The Board agrees that IRPs and amendments to IRPs, both of which are approved by cabinet, are indeed expressions of public policy, for which it must have regard. However, the government has also clearly distinguished between the purposes of the guidance set out in IRPs and the regulatory process applied to project applications:

The plan represents the Government of Alberta's resource management policy for public lands and resources in the area. It is intended to be a guide to resource managers, industry and the public with responsibility or interests in the area, rather than a regulatory mechanism. The plan has no legal status and is subject to revisions or review at the discretion of the Minister....

Energy resource decisions are subject to the application of regulatory approval processes under the jurisdiction of the Minister of Energy. This plan may influence regulatory decisions, but will not result in the categorical approval or rejection of energy proposals.¹

This excerpt recognizes that the Board must make its decisions based on the evidence before it in light of the statutory duties and considerations set out in its enabling legislation. Ultimately, the Board must make decisions that are in the public interest, and while it may have regard for the amendment, the Board's authority is in no way fettered by it.

The Board understands that without mitigation, the combined effects of chemical contamination and water table changes associated with mining the southwest portion of the MLWC may destroy bryophyte communities to the northeast, interrupting peat production. The Board does, however, accept that Alberta is satisfied that mining in this portion of the MLWC can take place with adoption of the appropriate mitigative measures and is prepared to allow the project to proceed subject to their approval of a detailed mitigation plan.

¹ Fort McMurray – Athabasca Sub-Regional Integrated Resource Plan, 1996, p. iii.

TrueNorth's MLWC Sustainability Plan does propose a process that should establish the feasibility of such mitigation. The Board is prepared to agree to the process, having regard for Alberta Environment's commitment to require TrueNorth to demonstrate its plans before any disturbance is allowed in the wetland complex. The Board notes that the onus to establish a workable and credible plan will be on TrueNorth. The Board supports Alberta's intention to condition its approval to require TrueNorth to provide an acceptable mitigation plan prior to mining in the MLWC.

The Board recommends that Alberta direct TrueNorth to convene a committee of stakeholders and regulators, as proposed in the MLWC Sustainability Plan, to oversee the collection of baseline monitoring data, establish the natural variability of the wetland, establish criteria to protect the biotic diversity and function of the no-surface-access zone, critically evaluate proposed mitigation plans in relation to the protection criteria, and evaluate postconstruction monitoring data and adaptive management.

The Board has assessed the bitumen underlying the wetland complex and has concluded that the estimated one billion barrels represents a significant resource that should be recovered as part of the FHOSP as long as it can be done in a manner that minimizes damage to the rest of the complex. The Board has weighed the benefit of recovering the bitumen underlying the MLWC against the direct environmental impacts and has concluded that in the broader context, it is in the public interest to approve mining within the MLWC, subject to establishing the appropriate mitigation plan.

11 ENVIRONMENTAL EFFECTS

11.1 Rare Plant Species and Vegetation Communities

11.1.1 Views of the Applicant

TrueNorth undertook two field surveys of the project lease area for rare plants in 2000. It discovered six rare vascular plants: Herriot's sagewort, turned sedge, beaked sedge, large Canada St. John's wort, a water lily and pitcher plant; three rare nonvascular plants, *Cephaloziella hampeana*, *Lophozia rutheana*, and *Drepanocladus sendtneri*; and one rare plant community, a balsam poplar-alder-leaved buckthorn field horsetail. TrueNorth stated that the water lily could be either the white water lily or the Leibergii water lily. Both are ranked S1 in Alberta, signifying that five or fewer occurrences are known in the province. TrueNorth conducted a second survey in 2001, which yielded two additional rare vascular species: cyperus-like sedge and slender-leaved sundew.

TrueNorth stated that some of the additional seven rare nonvascular plants identified during a 2001 survey of the wetland on behalf of SRD were misidentified by the study's authors. It also said that the apparent rarity of some species was likely a function of undersampling, and that with further sampling in the future they might be recognized as uncommon, rather than rare. Nevertheless, TrueNorth admitted that further survey work in the area might yield additional rare nonvascular species.

TrueNorth also reviewed the Alberta Natural Heritage Information Centre (ANHIC) database to identify rare species and vegetation communities that might be present in the project area. It found that 95 rare vascular plants, 39 rare nonvascular plants, and 16 rare plant communities may occur in the area.

TrueNorth stated it was not practical to conduct rare plant field surveys for an area as large as the terrestrial study area. It therefore modelled the potential for rare plant occurrences based on their known associations with ecosite phases. This allowed TrueNorth to estimate the areas of high, moderate, and low potential that would be directly affected by its project based on its predictions of future ecosite phases.

TrueNorth found the S1 water lily in a number of sinkhole lakes and Susan Lake. TrueNorth stated that it had no plans to disturb the sinkhole lakes directly, but it recognized that changes to the water table associated with mining nearby could affect the lily's habitat and potentially its survival at those sites. The mine would remove Susan Lake. The 2001 survey discovered additional locations in the patterned fen northeast of the proposed mine.

TrueNorth stated that it would undertake additional surveys in selected high-potential sites in advance of each phase of the mine development and would consider means such as avoidance and transplantation to minimize the project's impacts on rare plants and vegetation communities.

11.1.2 Views of the Interveners

Views of OSEC

OSEC believed that the number of rare species in the lease area could be greater than the current tally, noting that additional rare species had been discovered with each new field survey. In particular, OSEC observed that despite extremely poor field conditions, the SRD-sponsored wetland field survey had discovered an additional 60 common and 6 rare species not observed in TrueNorth's surveys. OSEC concurred with TrueNorth's view that the large number of new species reflected the fact that TrueNorth surveys focused primarily on vascular plants, whereas the SRD study focused on nonvasculars.

OSEC believed that it was entirely inappropriate for TrueNorth to attempt to use a clearly incomplete and primarily vascular plant species list to assess the uniqueness of the MLWC, because the dominant peatland species are mosses. OSEC believed that the new data clearly showed that TrueNorth's assessment of the uniqueness of the MLWC in terms of the number of S1 and S2 rare species was invalid.

Views of Alberta

Alberta stated that although TrueNorth had identified a number of rare vascular and nonvascular plants and a rare poplar/alder-leaved buckthorn/horsetail community in the project area, it had not proposed any effective mitigation plan to lessen or mitigate the impacts of the project. Alberta said it would require detailed mitigation planning as part of any EPEA approvals it might grant. It also strongly recommended additional fieldwork to define the distribution and habitat characteristics of the poplar/alder-leaved buckthorn/horsetail community.

11.1.3 Views of the Board

The Board accepts TrueNorth's commitment to undertake additional surveys in advance of each phase of the mine development. It also expects TrueNorth to consider methods to minimize project impacts on rare plants and vegetation communities by means such as avoidance or transplantation.

The Board supports Alberta's intention to require detailed mitigation planning as part of any EPEA approvals.

11.2 Wildlife

11.2.1 Views of the Applicant

TrueNorth indicated that its wildlife impact assessment focused primarily on how the project might affect animal habitat. Baseline ecosite phases² and land-use features of the terrestrial study area were mapped and interpreted with the help of Alberta Vegetation Inventory data, land-use data, and field surveys. Models were borrowed or adapted from previous assessments to quantify the relative value of ecosite phases as habitat for a set of key indicator resources, i.e., species chosen for study. The impact of the project was expressed in terms of changes in habitat availability, connectivity, and security between the present, the year 2020 at the peak of development, and the post-closure year 2045. TrueNorth indicated that ecosite phase maps for the future were developed on the assumption that reclamation would be successful and that the ecosite phases of reclaimed landscapes were predictable based on the soil, moisture, and nutrient conditions of the reclaimed landscape.

TrueNorth stated that the project would alienate wildlife from the active mining areas. It said that progressive reclamation and the thickened tailings technology would limit alienation compared to previous mining practices by restoring usable habitats in the nonactive areas as quickly as possible. Increased access created by the project would reduce core security areas. TrueNorth stated that it would close and reclaim nonessential roads and trails within its lease area and work with stakeholders beyond the lease area to reduce cumulative effects on core security habitat. TrueNorth said the reclaimed landscape would produce more mesic ecosite phases, marsh, open water wetlands, and upland mixed-wood stands at the expense of peat-accumulating wetlands and drier ecosite phases, with commensurate effects on species preferring those habitats.

TrueNorth singled out moose, black bear, and bird communities reliant on hydric ecosites, peat-accumulating wetlands, and white spruce forests as species most affected by the proposed project.

TrueNorth identified a number of rare and endangered species that were either known or suspected to be present in the project area, including the yellow rail, whooping crane, short-eared owl, and Canadian toad.

² An ecosite is a functional ecological unit defined by nutrient and moisture availability for plant growth. An ecosite phase is a subdivision of an ecosite characterized by the dominant canopy species.

11.2.2 Views of the Interveners

Views of OSEC

OSEC believed that TrueNorth's EIA did not adequately reflect the impacts of the project on wildlife populations. It believed that Alpac's management unit A7J was too small a study area to provide a representative picture of habitat use and land-use conditions in the region. It noted that significant cumulative losses of habitat and habitat connectivity were predicted, even though the study boundaries excluded a significant amount of development in the region. OSEC suggested that the qualitative habitat modelling approach adopted by the wildlife and fish subgroup of CEMA could be applied to remedy this shortcoming of the assessment. It asked the Board to require TrueNorth to undertake an assessment of habitat, habitat core security, and connectivity for a larger, more inclusive regional study area before the project was allowed to proceed.

OSEC asked the Board to require TrueNorth to offset the project's incremental contribution to regional habitat fragmentation by reclaiming any nonessential access corridors and linear disturbances on the lease area not slated for mining until later in the life of the project. It also asked the Board to require TrueNorth to reclaim areas off site, particularly in areas of high habitat value.

Views of the AWA

The AWA stated that the endangered whooping crane had been observed on the fen at least four times since 1994, although TrueNorth's EIA referred only to a single siting in 1976. It stated that the MLWC was known to be directly in the cranes' flight path from Aransas, Texas, to their breeding grounds in Wood Buffalo National Park and may well be the birds' last stopover on the northward migration. The AWA suggested to the Board that monitoring be undertaken during the narrow spring and fall migration period to confirm or disprove the importance of the site to the whooping crane.

Views of WBFN

WBFN stated that moose populations and fur-bearers had declined in the area, which it attributed to increased access for hunters. It believed furbearers did not like to cross pipeline and power corridors. WBFN expressed concern that more development would further erode the populations of wildlife and affect the livelihoods of trappers and hunters.

Views of Alberta

Alberta noted that the Fort Hills area and the Birch Hills to the west consistently supported higher moose densities than other landscapes in the northeast region. It stated that TrueNorth's project as proposed would contribute to significant cumulative effects on the habitat connectivity and core security habitat of large mammals such as moose, black bear, and lynx. Alberta called for baseline data and long-term monitoring of waterfowl as a precondition for development in the McClelland Lake watershed.

11.2.3 Views of the Board

The Board recognizes that active mining areas remove wildlife habitat and interrupt natural wildlife corridors. The Board believes that with adoption of the appropriate mitigative measures, as will be required by Alberta, detailed ten-year reclamation plans, and the establishment of the appropriately sized wildlife corridors adjacent to the Athabasca River wildlife impacts can be maintained within acceptable levels. The Board supports Alberta's intention to require TrueNorth to conduct additional monitoring of wildlife and waterfowl to ensure that the baselines are established. This baseline information will be of significant value in establishing the appropriate mitigative measures and in determining the appropriate width for the setback from the Athabasca River.

11.3 NO_x Emissions and Acidification

11.3.1 Views of the Applicant

TrueNorth stated that maximum predicted one-hour average nitrogen dioxide (NO₂) concentrations above the Alberta Ambient Air Quality Guidelines (AAAQG) occur for the application and cumulative effects assessment (CEA) cases. The FHOSP NO₂ contributions to cumulative emissions would increase the area exposed to one-hour exceedance by 0.7 per cent. TrueNorth also asserted that the predicted 24-hour average NO₂ concentrations were above the AAAQG for all assessment cases, including the baseline. The FHOSP would increase the area exposed to 24-hour exceedances by 12 per cent.

TrueNorth stated that NO_x emissions from mobile mine equipment and fixed plant sources, such as gas-fired heaters and boilers, would be 25 tonnes per day (t/d). TrueNorth predicted that its emissions would constitute 10 per cent of the 239 t/d predicted regional NO_x emissions. In its environmental assessment of the FHOSP, TrueNorth recognized potential impacts of NO_x as an air pollutant, an acidifying emission, and a precursor of ground-level ozone.

TrueNorth submitted that emissions from the FHOSP would not significantly contribute to acidification of soils and water in the region. It maintained that its dispersion model predictions of emissions were founded upon conservative assumptions and that the predicted levels of acidifying emissions and potential acid input (PAI) values were, as a result, significantly overstated in the EIA. TrueNorth pointed out that it would not contribute to regional sulphur dioxide (SO₂) emissions, since its SO₂ emissions were predicted to be 1.73 t/d and the project did not include a bitumen upgrader.

In examining the cumulative effects of NO_x emissions, TrueNorth noted that the PAI target load proposed by the Clean Air Strategic Alliance (CASA) was 0.25 kilo-equivalents of hydrogen ion per hectare per year (keq H⁺/ha/yr) (the Alberta interim critical load for sensitive soils). TrueNorth predicted that exceedances of the target load would occur as a result of the cumulative increase in NO_x emissions contributed by both FHOSP and other industrial developments. TrueNorth predicted that it would contribute 9.5 per cent to the area exposed to PAI levels in excess of 0.17 keq/ha/yr and 14.2 per cent to the area exposed to PAI levels in excess of 0.25 keq/ha/yr.

TrueNorth stated that it would manage its NO_x emissions by using best available technology for its mobile mine fleet and that low-NO_x burners would be used in fixed plant equipment.

TrueNorth noted that regional issues around NO_x emissions and acid deposition were being managed by industry through working groups such as the Wood Buffalo Environmental Association (WBEA), Terrestrial Environmental Effects Management Group (TEEM), and the NO_x/SO₂ Management Working Group (NSMWG), a subcommittee of CEMA. It said that results from the NSMWG were expected in 2002.

11.3.2 Views of the Interveners

Views of OSEC

OSEC stated that the NSMWG was working to design and establish a management system for regional NO_x and SO₂ for the RSDS area, but that it had yet to complete its work. Therefore, in the absence of established environmental capacity guidelines and the design and implementation of this regional management system, the incremental addition of acidifying emissions to the region remained a significant concern. OSEC observed that the CASA target load of 0.25 keq H⁺/ha/yr for sensitive soils was already exceeded in the oil sands regions due to existing emissions.

OSEC requested that should the FHOSP be approved, conditions be added to the approval requiring TrueNorth to

- comply with measures recommended by the NSMWG in a timely fashion,
- use enhanced NO_x control on heaters and boilers, and
- use a mine fleet with the lowest emission vehicles available.

Views of Alberta

Alberta stated that NO_x emissions should be controlled to the lowest practicable level through the use of the most appropriate pollution prevention and control technologies. Alberta accepted TrueNorth's proposed use of low-NO_x burners in stationary combusting sources as consistent with Alberta's policy for minimization.

Alberta noted that ground-level NO₂ concentrations as predicted by TrueNorth in the EIA were similar to predictions presented in other projects in the vicinity. Alberta believed that TrueNorth could be considered a significant contributor to NO_x emissions in the region. Alberta stated that the NO₂ and NO_x emissions from the mine mobile equipment should be further studied and minimized. It believed that regional NO_x emissions would increase in the future, so the potential effects of these emissions should continue to be studied through the existing regional initiatives.

Alberta stated that it might include conditions in any EPEA approval requiring further monitoring to provide data to compare to model predictions. Alberta stated that should the project proceed, TrueNorth and other oil sands mine operators should consider an industry undertaking to review the minimization of emission from mobile sources. Alberta might also include conditions in its approval requiring TrueNorth to demonstrate that all replacement mine

vehicles would meet the latest vehicle emissions standards and that they would be equipped with effective emission control technology.

With regard to acid deposition, Alberta's position was that due to the incremental increases in acid deposition, a long-term goal for the region should be enhancing the monitoring program to ensure that all components of acid deposition were being monitored. All operators that were sources of acidifying emissions would be expected to contribute to the regional air quality monitoring and management system through compliance and stewardship.

Alberta added that it might include conditions in its approval requiring TrueNorth to participate in ongoing regional environmental management and monitoring initiatives to address acid deposition.

11.3.3 Views of the Board

The Board recognizes the concerns surrounding the volume of NO_x emissions that would result from the project and the potential direct and indirect impacts these emissions would have on the environment on a project-specific and cumulative basis. However, in mitigation of these concerns, the Board notes

- TrueNorth's efforts to minimize emissions by using the best available technology for its mobile mine fleet and low-NO_x burners for fixed plant equipment, and
- the conservative nature of the models used to predict ground-level concentrations of NO_x.

The Board notes that results from NSMWG are expected in 2002. The Board believes it is prudent for oil sands applicants to design their projects in such a way as to be able to have flexibility as necessary to meet new and reasonably foreseeable environmental standards that may be recommended by CEMA and accepted by the regulators. The Board recommends that Alberta direct TrueNorth to meet the requirements identified as a result of this work.

The Board supports Alberta's intention to condition the EPEA approval to require further monitoring to provide data to compare to model predictions. TrueNorth should be expected to conduct independent monitoring in the absence of a multiparty program. The Board also supports Alberta's intention to require TrueNorth to demonstrate that all new and replacement vehicles and equipment meet the latest emissions standards.

11.4 Greenhouse Gases

11.4.1 Views of the Applicant

TrueNorth stated the overall emission intensity of the FHOSP had been estimated at between 31 and 39 kg of CO₂-equivalent for each barrel of bitumen produced, depending on the performance of the tailings management. This would increase Alberta's annual greenhouse gas (GHG) emissions by up to approximately 2.69 megatonnes (Mt) of CO₂-equivalent annually, a 1.2 per cent increase compared to Alberta's total GHG emissions in 2000. TrueNorth indicated that GHGs would be produced by combustion of diesel in the mine fleet and natural gas in the cogeneration units. Methane was also expected to be produced from the biogenic sources in the tails, but it believed that the use of thickened tails would greatly reduce the potential for methane

generation. TrueNorth expected its biogenic methane production modelling assumptions to be proven conservative over time and actual GHG emissions associated with the FHOSP to be lower.

TrueNorth was committed to using leading technologies to minimize GHG emissions, including a low-temperature extraction process, thickened tailings, heat recovery from process water, and cogeneration of electricity. TrueNorth believed that this project had the best in class GHG emissions performance for bitumen production and compared favourably on an emission-per-barrel basis with the GHG emissions intensity of competing sources of heavy crude production in Canada and around the world.

11.4.2 Views of the Interveners

Views of OSEC

OSEC argued that TrueNorth should file a comprehensive GHG management plan that identified specific initiatives that would enable it to meet emission reduction targets outlined in the plan.

OSEC stated that carbon intensity was a useful indicator for comparing different corporate entities but failed to allow either an assessment of environmental impact or progress towards meeting Canada's international GHG commitments, since both of the latter are measured in terms of absolute emissions, not emissions intensity. Therefore OSEC believed that TrueNorth's proposed efforts to reduce carbon intensity of energy production were likely to result in an increase in absolute emissions, and in any case were not directly relevant either to the goal of reducing environmental impacts over time or meeting Canada's GHG commitments.

OSEC noted that TrueNorth intended to file an action plan with the Voluntary Challenge Registry following project approval. OSEC believed that this would not allow assessment of the adequacy of TrueNorth's planned measures to achieve GHG emission reduction unless the action plan were published prior to project approval. Therefore, in the absence of a GHG emission target, OSEC submitted that there could be little confidence about future levels of GHG emissions from the project.

Views of Alberta

Alberta stated that it might include a condition in its approval requiring TrueNorth to report annually on the FHOSP GHG emissions. Alberta expected the FHOSP to demonstrate "best in class" GHG emission performance and intended to include conditions in its approval in furtherance of this, which could take the form of a specific GHG emission intensity limit or a more generalized requirement to meet a "best in class" standard published by Alberta.

Alberta explained that its broader approach on climate change was to pursue sectoral agreements to gain industry commitment for action for reducing GHG emissions. If the project were approved, Alberta expected TrueNorth to participate fully in this effort. It said that in project design and planning, TrueNorth should bear in mind that through these sectoral agreements Alberta would seek measures that would achieve continuous improvement in emissions per unit of product and would determine the scope through which the sector would be able to pursue

GHG emission reduction through emission trading. Alberta expressed the desire to have a sectoral agreement in place before TrueNorth's planned start-up.

11.4.3 Views of the Board

The Board endorses TrueNorth's commitment to using leading technologies to minimize GHG emissions. The Board believes that the issue of GHGs is best dealt with through initiatives and policies developed at the federal and provincial levels. The Board recommends that Alberta continue to implement measures that would achieve continuous improvement in emissions per unit of product.

12 RECLAMATION

12.1 Views of the Applicant

TrueNorth stated that it would coordinate the reclamation of disturbed sites with its mine development plan to ensure progressive reclamation throughout the life of the project. Surface materials including peat, mineral soil, litter, fibric humic (LFH), and coarse woody debris would be stockpiled on site. Excavated subsurface materials such as the sodic Clearwater Formation would be returned to depth and covered with materials suitable for reclamation.

TrueNorth advised that the cost of remediation and restoration was included as part of its economic evaluation of the project and only 4000 hectares would be disturbed at any one time because of its progressive reclamation approach. TrueNorth could not agree to a condition that would compel it to maintain only 4000 hectares of disturbed land through the life of the project. It was concerned about an arbitrary limit being applied year by year that could reduce flexibility in mine planning.

TrueNorth presented information on the types and depths of reclamation materials to be stripped and stockpiled, a description of the reconstructed soils, and a reclamation material balance for the first ten years of operations and for 5-year intervals thereafter, later supplemented with specific areas to be disturbed and reclaimed in the first decade. TrueNorth also provided a design of the closure reclamation drainage system and maps of soils, vegetation, and land capability.

TrueNorth stated that it was moderately confident that direct placement of surface materials would prove to be an effective means of restoring nutrients and seedbank materials on reclaimed sites, although direct seeding could be required if stockpiled materials proved to be inadequate sources. It would use native seed to the extent possible and would establish seed mixtures in consultation with SRD and stakeholders.

TrueNorth was also moderately confident that it could recreate overall ecosite conditions on sites with known topography and drainage, although it pointed out that reclamation technology had not advanced to the stage that specific ecosite phases could be re-established on the landscape with confidence. TrueNorth stated that confidence in predicting outcomes for reclaimed mine pits would remain low until the depositional characteristics of in-pit tails was known. It was fairly certain it could reclaim the land base, because only 20 per cent of the tails being produced would

be of a soft nature, while 80 per cent would be coarse, for which there was a demonstrated record of reclamation. Also, approximately 23 per cent of the mining footprint would be overburden disposal areas in which TrueNorth said it had a good understanding of the material and its reclamation potential.

TrueNorth proposed the creation of three end-pit lakes and conducted mass modelling to estimate water quality conditions that might prevail in them. It estimated that water quality in the end-pit lake would eventually be sufficient to support fish. TrueNorth believed CEMA's end-pit lake subgroup would be developing better predictive capability and guidelines for construction of end-pit lakes.

TrueNorth summarized its objective for reclamation as achieving a stable, sustainable, and productive landscape with a diversity of conditions conducive to the development of a diversity of ecosites.

12.2 Views of the Interveners

Views of OSEC

OSEC stated that TrueNorth's assessment of the prospects for reclamation assumed successful integration of the as yet unproven LEE technology with an as yet unproven thickened tailings process to produce nonsegregating thickened tails. OSEC believed that low reclamation success by mining proponents in the oil sands region was a significant problem. Uncertainties existed regarding the long-term ecological viability and toxicity of end-pit lakes, the ability to recreate soil and successfully establish vegetation on tailings, and the ability to reclaim wetlands. OSEC fundamentally disagreed with the conservation and reclamation objective of increasing class 3 soils capable of forest production at the expense of class 5 fen soils.

OSEC noted that TrueNorth's predictions of wildlife impacts were based on the assumption that the disturbed habitat could be reclaimed successfully to the degree it predicted. In OSEC's view, the reclamation plan was unproven and there was considerable uncertainty that TrueNorth would be able to successfully replace the habitat that would be disturbed. This was a serious concern for OSEC given the magnitude and irreversibility of the predicted impacts of this project.

Views of the AWA

The AWA submitted that TrueNorth's assertion that it would reclaim the disturbed sites was not credible in light of the industry's poor track record. It noted that not a single area in the oil sands region had yet qualified for a certificate of reclamation. The one area that appeared to be approaching certification was inappropriately planted with Siberian Larch, a nonnative species. The AWA stated that even less progress had been made toward reclaiming wetlands.

The AWA also testified that reclamation should not be confused with ecological restoration. It said the company's goal to "achieve a stable, sustainable, and productive landscape" was inappropriate, because success in those limited terms could be met by replacing, for example, a mixed wood forest with a much less valuable artificial pasture.

Views of Alberta

Alberta stated that TrueNorth's mine development planning had not progressed to the point where it could provide a detailed conservation and reclamation (C&R) plan. Alberta noted that the conceptual C&R plan provided by TrueNorth did not contain the level of information that Alberta normally required prior to issuance of an EPEA approval. Should the Board find the project in the public interest, Alberta would provide TrueNorth with directions on the necessary additional information required and timelines.

Alberta advised that some of the information and data required as part of the C&R plan must be collected prior to surface disturbance. This information would be required of TrueNorth prior to clearing land critical to that particular resource. Alberta stated that TrueNorth would be required to provide a C&R plan with the enhanced standards for landscape that fell within the Athabasca-Clearwater RMA.

Alberta noted that 12 per cent of land that had been cleared for oil sands mining activities in the Fort McMurray area had been reclaimed. None of the reclamation to date had been on whole tails, but only on coarse material and overburden. Alberta noted that no reclamation certificates had been issued for the oil sands area.

Alberta believed that considerable work remained to be done by the CEMA end-pit lakes subgroup in order to demonstrate that end-pit lakes would be acceptable. It stated there was no end-pit lake in the oil sands that could be used as a demonstration case. Alberta would require that conditions in end-pit lakes be acceptable, but said that there was significant uncertainty about whether or when a proposed end-pit lake could meet this requirement.

Alberta recommended that CEMA place a higher priority on the work of the CEMA end-pit lake subgroup to address the uncertainties. Alberta also intended to direct TrueNorth to develop acceptable mitigation options for its proposed end-pit lakes if water quality was problematic. Alberta recommended that the Board consider such conditions in its approval.

Alberta noted that seepage from the OPTA was expected to have an impact on the end-pit lakes and the fen, and it recommended that the Board include conditions in any approval it might issue that TrueNorth investigate appropriate water quality guidelines for end-pit lakes and the fen.

12.3 Views of the Board

The Board acknowledges that the reclamation of oil sands mines is a significant issue and is pleased to see that TrueNorth is proposing a new process to advance the reclamation of tailings.

The Board agrees with TrueNorth that the reclamation of overburden sites is generally understood. Overburden sites represent 23 per cent of the project footprint, and the Board commends TrueNorth in its plans to use native species to the fullest extent possible in its reclamation. The Board expects TrueNorth to work with Alberta to ensure that overburden sites are reclaimed in a suitable manner.

It is the Board's view that although land reclamation and associated issues are regulated under EPEA, the reclamation planning and final landscape objectives are important considerations when the Board is determining whether an oil sands development is in the public interest. It is important that Alberta and the Board work together to ensure that reclamation criteria and standards are clear and meet the objectives of both agencies.

The Board notes that TrueNorth has put a great deal of reliance on its progressive reclamation plans with respect to mitigation of environmental impacts. It commends TrueNorth for taking a leadership role and committing to a progressive reclamation goal of having only 4000 disturbed hectares of land at any one time. The Board notes that in the application TrueNorth provided evidence that 4800 hectares of land would be disturbed in 2014. The Board believes that it is reasonable to direct TrueNorth to limit the amount of disturbed land at any one time to 5000 hectares. Notwithstanding, the Board continues to expect that TrueNorth will endeavour to meet its goal of 4000 hectares disturbed at any one time. The Board recognizes that there is some uncertainty with respect to reclamation and that mine plans change. If TrueNorth finds that it is unable to limit land disturbance to 5000 hectares at any one time, it must apply to the Board for a variance.

The Board understands that TrueNorth would be the first oil sands mine to have this type of condition on its approval, but the Board also recognizes that TrueNorth submitted this aggressive reclamation commitment as part of its application. The Board is concerned about the pace of reclamation in the oil sands area and therefore believes that it is appropriate to recognize TrueNorth's commitments in this regard as a condition of its approval. The Board notes the establishment of the tailings reclamation technology development center in Devon, and it strongly encourages all oil sands operators, both existing and new, to actively support the efforts of this centre.

The Board understands that this is a new approach and there is a need to specify when mining areas are no longer considered disturbed land. As a result, the Board will work with Alberta and TrueNorth to define disturbed lands.

The Board acknowledges that end-pit lakes have been applied for in other oil sands projects; yet uncertainties still exist as to how they will work, and testing and verification are proceeding. The one concern with an end-pit lake is its ability to remove toxicants that may be moving down the drainage systems, either dissolved in the water or adsorbed to particulate matter in the drainage system. The Board agrees with Alberta that the work of the CEMA end-pit lake subgroup is crucial to the ongoing development of adaptive management plans. It is also important to have alternative plans in place as early as possible, in the event that the end-pit lakes fail in achieving water quality objectives. The Board supports Alberta in recommending to CEMA that a higher priority be placed on the CEMA end-pit lake subgroup. The Board supports Alberta's intention to condition its approval to direct TrueNorth to develop acceptable mitigation options for its proposed end-pit lake if water quality is problematic.

13 ABANDONMENT LIABILITY AND ENFORCEMENT

13.1 Views of the Applicant

TrueNorth stated that it was the general partner of the TrueNorth Energy Limited Partnership, which consisted of itself (TrueNorth Energy Corporation) and a limited partner, TrueNorth Energy Holding Limited Partnership. TrueNorth Energy Limited Partnership was ultimately owned and/or controlled by Koch Industries Inc., a large American energy company that had had subsidiaries operating in the oil and gas sector in Alberta for many years. TrueNorth indicated that it had entered into a joint venture agreement with another limited partnership, UTS Oil Sands Limited Partnership, owned by Calgary based UTS Energy Corporation, to own, develop, and operate the oil sands leases in question. The TrueNorth and UTS limited partnerships held ownership interests in the joint venture project, 78 per cent and 22 per cent respectively.

TrueNorth acknowledged that its corporate structure, i.e., the limited partnership, was used to provide flexibility in allowing for additional participants in the development of the oil sands leases. TrueNorth stated that it was receptive to additional partners joining the project and had been actively pursuing such investment since the spring of 2002. The final ownership structure, it explained, may well be different that currently constituted.

TrueNorth agreed that the issue of security for the funding of ongoing and final reclamation, abandonment, decommissioning, and third-party public liability was an important matter for the Board to consider, given that the current assets of any significance owned by the TrueNorth and UTS limited partnerships were the undeveloped oil sands leases and there would be no legal obligation on the part of TrueNorth's and UTS's corporate parents or affiliates to make good any deficiencies in this regard. It expressed acceptance of a project approval condition that it provide the appropriate assurances to the Board and the Alberta government regarding its capability to fund reclamation, decommissioning liabilities, and other insurance requirements.

TrueNorth acknowledged that a number of approaches could be used to ensure that sufficient funding was available to address the broad public liability management issue, including the financial strength of its final ownership structure, security deposits, performance bonds and, in some cases, an appropriate financial commitment from its larger corporate family. It argued, however, that whatever mechanism was put into place, the result should not place it in an unfair competitive position with its corporate peers in the oils sands sector nor require it to inefficiently duplicate security commitments demanded by other government departments.

13.2 Views of the Interveners

Interveners, particularly those in the OSEC group, questioned whether the applicant, a limited partnership with limited assets, would be capable of financially meeting its reclamation and decommissioning responsibilities over the projected 40-year life of the proposed project. They queried how the Alberta public could have confidence that TrueNorth would actually carry out its reclamation and decommissioning in light of the applicant's parent company's, Koch Industries Inc., environmental compliance record in the United States. The interveners pointed out that the American parent had been fined US\$35 million in 2000 for environmental infractions, the largest

civil fine in the history of environmental protection. Through questioning, the interveners proposed that TrueNorth provide full cost bonding for reclamation liability.

Further, they submitted that in the event that TrueNorth was not in compliance with its approval but still operating, all profits earned by TrueNorth during the period of noncompliance should be paid into a "compliance royalty fund," which would be used to promote the market penetration of alternative energy. The interveners argued that there was a demonstrable need for society to move away from a carbon-based economy because of the unacceptable pollution impacts on human health and the environment.

13.3 Views of the Board

In the Board's view, proponents of energy projects may use legitimate and legally recognized forms of business organization in order to advance their commercial interests. Corporate configurations such as limited partnerships, limited companies, and joint ventures are common examples of business organization and, in the absence of compelling reasons to reject such arrangements, are generally acceptable to the Board. The existence of limited liability for limited partners, for example, will not of itself be sufficient reason to deny such an applicant's project. A similar restriction on liability is afforded shareholders of a limited company.

However, the government and public are entitled to have successful proponents provide a financial mechanism for the funding of broad public/environmental liability for contingencies that may arise during construction and operation of an oil sands mining project, as well as for the reclamation and decommissioning of the site and plant at the end of the project's life. This is especially important when applicants have limited assets at the time of the application for approval and the financial strength of the final ownership structure is unknown. Depending on the specific circumstances before the Board, proponents may be required to post performance bonds, make security deposits, establish internal or external accounts in which funds from revenue are deposited on an ongoing basis for reclamation and decommissioning, and obtain both third-party and environmental damage insurance coverage. In some cases, the Board may also ask that security instruments be provided by an applicant's corporate parent or affiliate.

Whatever the form of the security arrangements, the Board believes that approvals should be conditioned to require that such arrangements be in place prior to the start of construction. With respect to the appropriate insurance requirements, the applicant must obtain an insurance review by an independent consultant to determine the appropriate level of environmental and third-party liability coverage.

The Board notes OSEC's suggestions with respect to enforcement and compliance. Presently the Board has developed an enforcement ladder for operating criteria and it is part of *ID 2001-7*. The Board recognizes that oil sands mining projects may need a different enforcement ladder from conventional oil and gas because of the scale of the projects, and it has an initiative in place to develop generic enforcement ladders for the oil sands mining industry. The Board expects all oil sands operators to participate in this initiative.

14 CUMULATIVE EFFECTS OF OIL SANDS DEVELOPMENTS

14.1 Views of the Applicant

TrueNorth concluded that the FHOSP would have minor cumulative effects contributions for most environmental parameters, generally less than 5 per cent. It also pointed out that there were a number of current environmental thresholds and standards that applied to existing oil sands operators in the region and that would be applicable in the short term, until some of the CEMA objectives were complete. TrueNorth believed there was adequate information from other EIAs and its work and that of CEMA, the Regional Aquatics Monitoring Program (RAMP), and WBEA to allow the Board to make a determination of whether the project was in the public interest.

TrueNorth believed that the work of CEMA was of world class quality and emphasized the importance of CEMA issuing its recommendations to the Alberta government in a timely manner. It noted that CEMA was close to completing several recommendations. TrueNorth also noted the difficulty multistakeholder groups had in achieving consensus-based recommendations. TrueNorth confirmed that it was currently participating in CEMA and committed to continue this active role.

14.2 Views of the Interveners

Views of OSEC

OSEC noted that the Board's practice had been to refer concerns regarding the potential cumulative impacts of projects to the CEMA process, which the Board had endorsed as an appropriate forum for their resolution. OSEC explained that while it was instrumental in the development of the CEMA process, was an active participant, and remained supportive, it was concerned with the number of current and proposed projects and the delays CEMA was encountering in the delivery of environmental management outcomes. Although results from the NSMWG might be available by the end of the year, most CEMA results were delayed from 2 to 4 years from their original timelines. OSEC believed this was the result of dealing with complex and difficult issues within a multistakeholder forum. It said that the delay had resulted in a lack of appropriate and useful information being placed before the regulators who are making decisions on specific project applications.

OSEC contended that the continued issuance of approvals for oil sands projects in the absence of management objectives from CEMA and established environmental management plans undermines the CEMA process. It suggested that a continuation of this practice for the proposed FHOSP was particularly ill advised. OSEC believed the adverse environmental impacts from the FHOSP would be considerable, particularly the negative impacts on the MLWC. OSEC argued that the impacts would likely be irreversible. Further, it submitted that the mitigation measures proposed by TrueNorth were untried conceptual approaches that were difficult to assess in a meaningful way.

OSEC envisioned a process whereby the Board would use a two-step process to resolve environmental management issues. During the first phase, recommendations would be solicited

from the various subgroups on the appropriate time frame for delivery of the scientific objectives and the timing of the preparation of the relevant management plans. If this process could not be achieved by agreement, the Board would determine the matter based on the submissions of the parties. In the second phase, if the management objectives were not put in place within the time frames set earlier, an inquiry, possibly a joint process with Alberta, would be initiated where the science and any recommendations would be submitted for resolution.

Views of Suncor and Syncrude

Suncor endorsed the premise of CEMA despite the criticism levelled by some parties that the pace of its work was slower than desirable. It did not agree that there was any basis for halting continued oil sands development or with the request for a regional inquiry. Suncor believed that it was essential to ensure that CEMA had the appropriate participation and resources from all concerned parties and that the environmental issues were addressed in a sequence that recognized the importance and the need to provide the information and recommendations to regulators for implementation. Syncrude stated that while CEMA had made progress with certain issues, the length of time taken to reach consensus among the many participants on these matters and the time required to resolve the remaining issues was a matter of concern. Syncrude submitted that the Board should encourage adoption of a protocol that involved the submission to the appropriate regulators of both majority and minority opinions for determination by the regulators.

Views of Alberta

Alberta stated that the regional sustainable development strategy (RSDS) provided a framework for balancing development with environmental protection using adaptive resource management objectives recommended by regional stakeholders. The strategy supported the identification of priority regional environmental issues and the management of science and monitoring work needed to understand the issues. The RSDS also provided an avenue for government and stakeholders to work together to set new, specific regional resource goals and targets.

Alberta noted that the RSDS was being implemented in partnership with CEMA, consisting of stakeholders from environmental groups, Aboriginal communities, industry, the public, and various levels of government. It said that based on identification of priority issues, CEMA working groups were developing environmental management objectives to be approved by CEMA as a whole body. Recommendations approved by CEMA would then be provided to Alberta for consideration.

Alberta stated that it was committed to continue its work with CEMA. It believed it to be the most appropriate vehicle to deliver recommendations to deal effectively with regional environmental management issues.

Alberta encouraged all CEMA members to continue their support and participation and to ensure that the work plans of CEMA were not impacted by a lack of human or financial resources.

14.3 Views of the Board

The Board recognizes the potentially significant impacts predicted as a result of current and proposed industrial development in the Fort McMurray region. In a series of decision in this area, the Board has placed significant reliance on the success of the CEMA process to verify that both existing and future oil sands developments remain in the public interest. The Board believes that CEMA's work is important and that the results will assist the Board in meeting its regulatory mandate to ensure that energy developments are carried out in an orderly and efficient manner that protects the public interest.

The Board understands that CEMA is dealing with complex and difficult issues within a multistakeholder forum. Nonetheless, it is concerned with delays in the issuance of recommendations. As a result, it will be discussing options with both the Alberta and federal government by which the CEMA process can be encouraged to produce more meaningful results in an earlier timeframe.

The Board acknowledges the key role that Alberta, industry, federal government, and EUB staff continue to play in providing a high level of technical expertise and resources necessary for CEMA to achieve its goals. The Board agrees with the interveners that it is important to ensure that CEMA has the appropriate participation and resources from all parties involved and the issues are worked on in a sequence that recognizes the priority of the various issues. The Board expects that TrueNorth will participate fully in the regional environmental management initiatives and that it will abide by their outcomes.

15 SOCIOECONOMIC EFFECTS AND PUBLIC CONSULTATION

15.1 Public Consultation

15.1.1 Views of the Applicant

TrueNorth released a public disclosure document for the FHOSP on August 30, 2000. It publicized the availability of the document through newspaper advertising and a news release distributed to key media outlets and set up a toll-free number, a contact e-mail address, and a corporate Web site to enable stakeholders to contact TrueNorth about the FHOSP. On January 11, 2001, it released an update to the public disclosure document that provided the basis for a doubling of the project's production.

TrueNorth contended that FHOSP information was shared in a timely and open manner. This involved numerous formal and informal opportunities for interested parties and stakeholders to learn about the project, to work through issues of concern, and to come to an understanding about how to address the issues.

TrueNorth submitted that its approach to keeping the public informed about the project included news releases, speaking engagements, mailouts, open houses (Fort McMurray and Fort Chipewyan), participation in community events, meetings with stakeholders, corporate Web site, project office in Fort McMurray, newsletter, and active involvement in regional issues

management forums. TrueNorth stated that the input provided throughout its public consultation process had played a positive role in shaping the project, and it committed to continue consultation with stakeholder groups and individuals potentially affected by the FHOSP.

TrueNorth pointed to a number of examples to demonstrate the effectiveness of its public consultation process. It added that it was able to resolve the most important environmental, social, cultural, and economic issues of concern for the residents of Fort McKay and Fort Chipewyan, culminating in memorandum of understanding and community partnership agreements with three of the Aboriginal groups in the region. TrueNorth stated that it worked closely with the Faichney and Boucher families, the registered trappers with rights in the project area, to understand and address their concerns. Further, it said that information about the project was shared with the Regional Municipality of Wood Buffalo and with many of the community organizations based in Fort McMurray to identify concerns related to the pace of regional growth.

15.1.2 Views of the Interveners

Views of OSEC

OSEC acknowledged TrueNorth's efforts to engage in a proactive consultation process but criticized TrueNorth for not allowing enough time prior to the hearing for the two parties to reach agreement on the issues. OSEC argued that this left it little choice but to bring forward a broad list of issues for consideration by the Board. If TrueNorth had provided a more timely response, OSEC said, some of its concerns could have been resolved.

Views of WBFN

WBFN was critical of TrueNorth's consultation process for not engaging the nonstatus Indians and Metis within the Wood Buffalo region to the same extent it engaged the First Nation groups and recognized Metis locals.

WBFN requested that its group be consulted in a meaningful manner. It felt that the unwillingness of the company to consult with it because it was not a registered First Nations group or a recognized Metis local was not acceptable. Its membership includes Aboriginal peoples who reside throughout the Wood Buffalo region, and its lack of status as an Aboriginal group should not have diminished the validity of its concerns.

Views of Cree Burn Lake Preservation Society

The Cree Burn Lake Preservation Society asserted that TrueNorth failed to consult fairly and appropriately with all Aboriginal peoples of the Athabasca region and essentially engaged in private discussions with two local band offices. The fact that two individuals with trapline issues came forward at the hearing was, in its view, evidence of TrueNorth's failure at effective consultation.

15.1.3 Views of the Board

It is the Board's view that the public consultation process undertaken by TrueNorth consisted of a concerted effort to identify and engage those potentially affected by the FHOSP. The consultation process involved stakeholders in a meaningful dialogue about the project, its potential impacts, local concerns, and possible mitigation measures. The Board notes that while TrueNorth was not able to resolve all issues raised by the local interveners, the Board commends TrueNorth for its proactive approach to consultation and its success in reaching agreement and understanding with a number of the Aboriginal communities.

The Board commends TrueNorth for its early participation and support for the regional issues management groups. The Board expects TrueNorth to continue its consultation and communication effort and to honour the commitments it has made to all parties.

15.2 Community Services and Infrastructure

15.2.1 Views of the Applicant

TrueNorth acknowledged that the FHOSP would contribute to a number of stresses in the Regional Municipality of Wood Buffalo, including pressures on medical resources, increased traffic volumes, and problems for local service providers in recruiting and retraining staff. It also pointed out that the FHOSP would be one of a number of oil sands projects operating in the Wood Buffalo region and that the cumulative effect of previous projects had already led to increases in population, a tight housing market, low vacancy rates for rental properties, high rents, and rising house prices.

TrueNorth submitted that the management of regional issues should involve a wide spectrum of public, government, and industry stakeholders. TrueNorth indicated that its role as a member of industry was to identify issues, provide information to the appropriate authorities, pay royalties and taxes, and play an advocacy role with government. TrueNorth stated that it was in its interest to do its part in managing the cumulative effects of oil sands development, and to this end it would continue its active involvement in regional issue management forums such as the Regional Infrastructure Working Group (RIWG) and the Athabasca Tribal Council (ATC)/Athabasca Resource Developers (ARD). In addition to its active participation in these committees, TrueNorth pointed out that the agreements the company entered into with the Aboriginal communities did attempt to address some of their particular community service and infrastructure needs.

TrueNorth said that past efforts to address and manage the regional socioeconomic issues had been effective and had delivered results, particularly with respect to advancing knowledge and advocacy. TrueNorth also identified a number of committees, subcommittees, groups, and organizations that were working on these issues, in addition to the government departments responsible for addressing these concerns.

15.2.2 Views of the Interveners

Views of OSEC

OSEC submitted that many of the community services in Fort McMurray were struggling to meet the increased demands resulting from the rapid pace of growth in the region.

OSEC stated that low vacancy rates, high rents, and high housing costs were negatively impacting low-income and fixed-income households in Fort McMurray. The high demand for labour was making it difficult for small- and medium-sized employers to recruit and retrain staff, and the high cost of living restricted their ability to recruit staff from outside the region. OSEC argued that people employed in the service and nonprofit sectors could not afford to live and work in Fort McMurray. It also expressed concern about traffic safety due to the high levels of impaired driving and the number of drug-related offences in the region.

OSEC submitted that better planning and management of the human environment was needed, otherwise the FHOSP would aggravate an already serious situation. OSEC acknowledged that the municipal government was working to resolve the issues but suggested it had been unable to keep pace with the rapid pace of development.

Views of Fort McMurray Medical Staff Association

The Fort McMurray Medical Staff Association stated that public safety would be at risk if additional demands were placed on a medical system very near or already stretched to capacity. The Medical Staff Association contended that the additional demands placed on the medical resources by the FHOSP would adversely affect the quality of health care. In its view, Fort McMurray did not have sufficient physicians or funding to provide health care for the additional camp workers, permanent employees, and their families should the FHOSP proceed.

The Medical Staff Association stated that additional funding was needed prior to start-up of the FHOSP and that a review of the funding formula was needed so that funding better reflected the realities of the population structure in Fort McMurray (i.e., that it take into account the construction camps). It submitted that a long-term planning process must be initiated to ensure that health care resources were adequate for the region and in place when needed.

The Medical Staff Association acknowledged and supported the provincial government's efforts to respond to its funding needs, which included a recent (June 2002) \$5 million announcement for additional funding and earlier (March 2000) special funding announcements. It qualified its support by stating that this crisis management approach would not be effective in the long-term and pointed out that the new funds were one-time increases with no guarantee of additional funding in the future. The Medical Staff Association indicated there had been some talk of resurrecting the Northeast Area Commissioner to help facilitate development in the Wood Buffalo region. If this approach were taken, it argued, the Northeast Area Commissioner should have access to funds and be responsible to Cabinet. The commissioner should also have a responsibility to the local citizens, in particular the municipal council, the regional health authority, the school boards, and Keyano College, so that their role in facilitating development was balanced against the concern for infrastructure and the needs of the affected community.

The Medical Staff Association submitted that the municipality, provincial government, and associations needed to work together to solve these problems, but that industry also had a role to play. This role should include financial and human resource contributions in support of a task force that could secure the funds needed and initiate a long-term planning process.

The Medical Staff Association stated it had not raised its concerns or initiated discussions with the regional planning groups already active in Fort McMurray, such as RIWG or the Oils Sands Development Facilitation Committee, and therefore could not comment on whether these groups would provide an appropriate forum for the requested task force. It said that the task force should not end up in a "paper-tiger" committee; in its view, the task force required strong, credible leadership that could secure funds for health care resources and could implement the health care needs study and long-term planning process.

Views of WBFN

WBFN expressed concern that the high cost of living in Fort McMurray had pushed out Aboriginal peoples living in the city because they could not afford to pay the high rents. The influx of other people to Fort McMurray and the displacement of Aboriginal peoples from the city had eroded the Aboriginal community in Fort McMurray and caused hardships for those that remained.

Views of Alberta

Alberta indicated that there was an indirect, adverse consequence of cumulative oils sands expansions in the Fort McMurray region: the rapid increase in population drawn to the region by the expansions created a shortage of affordable housing and rental accommodation. The shortage caused rents to increase and rental accommodations to be converted into condominium units. Alberta submitted that the displacement of renters from low-cost accommodations into high-cost accommodations would carry significant consequences, potentially creating adverse human health impacts.

Should the Board find the project to be in the public interest, Alberta recommended a condition in the approval that would require TrueNorth to spearhead a joint industry-municipality initiative to address the lack of affordable housing. The initiative should focus on the displaced renters from low-cost accommodations, not on the company's own workforce. Alberta maintained that a condition in the approval at this time and with this proponent would, in effect, mandate that leadership be taken on the housing issue.

Alberta stated that it was familiar with the regional issues management groups already active in Fort McMurray, such as RIWG and the Oils Sands Development Facilitation Committee, but had not raised its concerns with these groups. It explained that previous initiatives had not been adequate to address the issue and a separate task group with strong leadership was needed to produce a real solution for the housing issue. Alberta suggested that the task group, under TrueNorth's leadership, should initiate a work plan outlining achievable milestones and appropriate timelines aimed at relieving the pressures on affordable housing in the short and long term.

15.2.3 Views of the Board

The Board acknowledges the evidence provided by a number of interveners that shows that community and public service providers and the Regional Municipality of Wood Buffalo are struggling to keep pace with the rate of development occurring in the region.

The Board notes that the responsible government agencies are aware of these concerns and that the impact on services has been identified and the appropriate authorities are responding to these concerns. While ongoing efforts to resolve these matters have not met the interveners' expectations, the Board must also take into consideration the fact that government agencies exist within a province-wide policy and funding framework and their ability to respond to the needs of the Wood Buffalo region must be balanced against the needs of other regions in the province. Further, the Board notes TrueNorth's submission that the timelines associated with project design and construction, the winding down of other large projects, and project planning to minimize the overlap of construction schedules will help to limit the degree of incremental pressures placed on community services and infrastructure.

The Board appreciates that industrial development does bring change, and it recognizes that the ability of a community to manage this change will ultimately determine the community's capacity for sustained prosperity and a satisfying quality of life. The Board acknowledges the important role the regional issues management forums such as RIWG and the Oil Sands Development Facilitation Committee have played in advancing knowledge on socioeconomic issues and through advocacy. However, it is the Board's view that a process is needed that provides a more coordinated and effective channel through which regional and cumulative socioeconomic impacts can be addressed in a meaningful and demonstrable way. The Board observes that a resumption of the concept of a Northeast Area Commissioner was being discussed as one alternative to address regional socioeconomic issues and that both the Medical Staff Association and TrueNorth have indicated that the idea might have merit in that it could help to provide some focus from a government perspective on addressing the concerns of the region.

The Board does not agree with the recommendation by Alberta to include a condition in the approval requiring TrueNorth to take a leadership role on the issue of affordable housing. The Board agrees that leadership has to be taken on this and other socioeconomic issues, but it would be unfair to the applicant to put the burden of addressing a regional planning issue on an individual applicant.

15.3 Historical and Cultural Resources

15.3.1 Views of the Applicant

TrueNorth stated its approach to community relations included a focus on supporting the cultural activities of Aboriginal and non-Aboriginal people. TrueNorth stated that one avenue the company used to achieve this objective was to create a partnership with arts and cultural organizations, including the National Theatre School, Alberta Ballet, Alberta College of Art and Design, Fort McMurray Historical Society, Keyano Theatre, and Fort McKay Cultural Awareness Program.

TrueNorth pointed out that it had been required to assess the historical resources for its EIA and had conducted a detailed survey as part of its historical resources impact assessment. The assessment included proposed mitigation measures to ensure that the cultural context of archaeological sites on its leases would be preserved or recorded. The Cultural Facilities and Historical Resources Division of Alberta Community Development reviewed TrueNorth's assessment and indicated it had satisfactorily addressed the prehearing requirements regarding the FHOSP. TrueNorth stated that it would adhere to Alberta Community Development's requirements and committed to implement an acceptable protection plan.

TrueNorth also made a commitment to preserve and protect the historic Bitumont Site located on its lease and indicated that it had already taken steps to secure the site. The company had installed two new gates, boarded the buildings, implemented routine checks by security guards, and cleared brush at the site to help protect it from potential fires. TrueNorth also had donated a building to the Fort McMurray Historical Society for use at Heritage Park on behalf of the FHOSP. The building would serve as the park's entrance and will also provide interpretation and storage of archives preserved from the site.

15.3.2 Views of the Interveners

Views of Cree Burn Lake Preservation Society

The Cree Burn Lake Preservation Society stated that its interest was in preserving the history of the Cree Burn Lake people. It submitted that the Cree Burn Lake archaeological site formed the primary gathering place and that the "scatters" or "isolated finds" located on TrueNorth's leases were all connected to the Cree Burn Lake site. The Society argued that the scatters mark the activities of the Cree and Dene people on these lands and that more work had to take place to interpret the scatters in order to better understand the history of the Cree Burn Lake people.

The Society acknowledged the work TrueNorth was doing to protect the Bitumont site.

The Society pointed out that a unique aspect of oil sands development is that rich archaeological resources were being uncovered as a consequence. It argued that careful research and interpretation of this history was not in conflict with development but that instead they should coexist. It intended to lobby both the federal and provincial levels of government for additional preservation measures to take place within the oil sands development region.

The Society sought roles in the preservation of historical resources and a role in cultural retention, including the acquisition of a surface lease for spiritual purposes. It explained that the interpretation of the region's history offered employment opportunities for Aboriginal peoples thus far ignored by local bands, government officials, and industry. This work would involve traditional land-use studies, continued archaeological investigations, archival research, anthropological study, and oral history research—activities it felt were vital to the retention of the region's historical resources.

Views of WBFN

The WBFN panel spoke to the importance of protecting and preserving the Cree Burn Lake site. It mentioned that the Cree Burn Lake site should not be excavated and shipped to Edmonton as was done at the Beaver River site.

15.3.3 Views of the Board

The Board is satisfied that the historical and cultural impacts appear to be addressed in a reasonable way and it believes it is appropriate for TrueNorth to work directly with Alberta Community Development on matters related to historical and cultural resources. The Board expects TrueNorth to meet its commitment to preserve the Bitumont site and to implement an appropriate historical resources protection plan. The Board notes that Alberta Community Development has accepted the Heritage Resources Impact Assessment prepared by TrueNorth.

15.4 Traditional Land Use

15.4.1 Views of the Applicant

TrueNorth indicated it had used the Fort McKay traditional land-use study to gain a better understanding of traditional land-use activities on its leases. A traditional environmental knowledge survey was undertaken, followed up with ground-truthing. The information gathered was included in TrueNorth's biophysical baseline for its EIA.

TrueNorth acknowledged that the FHOSP, along with other developments in the region, were having a significant effect on the opportunity to undertake traditional land-use pursuits. In response, the company committed to address the concerns of the registered trappers operating on TrueNorth's leases and entered into a number of community partnership agreements that established an objective to actively support and promote the traditional practices, culture, and language of these communities.

15.4.2 Views of the Interveners

Views of Cree Burn Lake Preservation Society

The Society submitted that the FHOSP would disrupt the trapline registered to the Mercredi family; this in turn would result in an inability of the family to supplement their income and their diet. It was established the Mercredi family trapline was located north of TrueNorth's leases, on the south banks of Athabasca Lake, or roughly 80 to 100 km from the TrueNorth lease boundary.

Views of Theresa Campre

Theresa Campre submitted that her family had a registered trapline located near Firebag River that belonged to her father, Joseph Okakie. Ms. Campre stated that she was currently researching her lineage to establish her right to the trapline but had not completed her search.

Views of WBFN

WBFN asserted that its members, Aboriginal people who reside throughout the Wood Buffalo region, had been negatively impacted by the oil sands development taking place on their traditional lands. It pointed out that with the oil sands development, there was increased access to their traditional lands, and as the region's population increased, recreational use of the lands also increased. This, combined with a dwindling habitat for wildlife, forced traditional users to travel farther to pursue a traditional way of life.

WBFN stated that because its traditional lands were being taken away, its members needed land that they could use for grazing, which would enable them to raise animals and become self-sufficient.

WBFN explained that its members with traplines outside the TrueNorth leases had already been affected by the extensive development in the area (oil sands mining, logging, highway construction, quarries) and the FHOSP would further decrease the productivity of their traplines. WBFN requested that its members be consulted about the impacts on their traplines.

15.4.3 Views of the Board

The Board believes that the assessment of traditional land use and traditional environmental knowledge has been adequately dealt with in the EIA submitted by TrueNorth, as well as in its commitments to work with the local First Nations bands.

The Board commends both TrueNorth and the Aboriginal communities for successfully negotiating the Community Partnership Agreements, which contain specific objectives to actively support and promote traditional practices.

A number of interveners provided evidence that traplines and other traditional land-use pursuits were being impacted by the cumulative industrial development in the Wood Buffalo region. The Board's jurisdiction precludes it from determining compensation of land-use impacts. The Board does note that TrueNorth has committed to work with the registered trapline holders directly impacted by the development of its leases.

16 FEDERAL SUBMISSION

The DFO and Environment Canada were unable to provide their submissions during the hearing because of timing constraints. The Board agreed to receive their written material on September 6, 2002, after the close of the oral portion of the hearing. Participants were then given an opportunity to review the federal government's position and provide a written response to the material by September 20, 2002. The Board received six responses to the federal submissions. OSEC requested that the Board reopen the hearing and allow it to issue a series of written questions to the two federal departments. The Board, by letter dated October 4, 2002, denied the request on the basis that most of the questions addressed the federal government's process for environmental assessment, protection, and enforcement, which were not of direct relevance to the

Board's deliberations. The Board believed that the few remaining questions related to issues that all parties had had a full opportunity to address during the oral part of the hearing.

16.1 Views of DFO and Environment Canada

DFO and Environment Canada made submissions with respect to the following issues:

- the cumulative effects of mining operations on regional water quality and aquatic environment resulting from tailings seepage, end-pit lake releases, and changes to surface drainage patterns;
- the progress of regional initiatives, including CEMA;
- the potential for fish health effects and fish tainting related to changes in water quality and the need for a long-term research and information collection program for the purposes of assessing the cumulative impacts of the FHOSP and other developments on fish tainting in the river;
- changes in flow conditions of regional watercourses, including the Athabasca River, due to the diversion of water;
- the release of potential acidifying, particulate greenhouse gas emissions associated with oil sands developments;
- the need for baseline water quality monitoring of predevelopment conditions in the MLWC; and
- incremental habitat losses with the aquatic ecosystems, including a 400 m setback from the Athabasca River.

DFO stated that its involvement in the FHOSP arose from the potential for the project to affect fish and fish habitat and the department's responsibilities in that regard pursuant to the Fisheries Act. DFO stated that it had reviewed the various components of the FHOSP with regard to its potential effects on fish and fish habitat. DFO was generally satisfied that any direct losses in fish habitat associated with these components could be mitigated or compensated, consistent with its "No Net Loss" principle.

DFO and Environment Canada were supportive of the regional initiatives but were concerned that they could not match the pace of development proposals. Environment Canada recommended that the Board encourage the development and implementation of interim environmental thresholds and objectives by the CEMA working groups.

Environment Canada stated that it was difficult to assess the potential impacts to migratory birds without additional baseline surveys and a better understanding of TrueNorth's mitigation measures. Environment Canada noted that should the FHOSP proceed, the statutory or regulatory provisions of the Migratory Birds Convention Act would be binding on TrueNorth.

16.2 View of the Interveners

The Fort McKay Industrial Relations Corporation, on behalf of the Fort McKay First Nation and Metis Local 122, supported the Federal submissions.

WBFN believed that the federal submissions identified a number of issues that could have detrimental effects on the Athabasca River and that these concerns needed to be considered by the Board in its review of the application.

The CFUW stated that the federal submissions identified a number of areas where there were uncertainties and where there was a need for additional baseline studies. It believed this supported its position that the application should be denied because there was insufficient information to determine if the MLWC was sustainable.

Alberta submitted that the federal submissions had not changed its view with regard to information and positions expressed in its written submission and oral testimony.

TrueNorth submitted that the federal submissions did not raise any new issues that were not already considered at the hearing.

16.3 Views of the Board

The Board notes that most of the issues identified by the federal submissions, such as air emissions, cumulative effects, MLWC, and impacts to Athabasca River, have been previously discussed in the decision. The specific matters that are squarely within the two federal departments' legislative responsibility, for example, issues arising under the Migratory Birds Convention Act or the Fisheries Act, will be dealt with by the federal departments in carrying out their duties under that legislation. The Board appreciates the participation and views provided by DFO and Environment Canada and notes that they have been active in other Board proceedings in recent years.

17 COGENERATION PLANT (APPLICATION NO. 2001202)

Application No. 2001202 is for approval to construct and operate an electrical power plant and transmission substation located at the project site. There were no specific issues raised with respect to this application. Environmental issues, such as emissions, for both Applications No. 1096587 and 2001202 are addressed in Section 11 of the decision.

17.1 Views of the Applicant

TrueNorth outlined how the efficient provision of process heat requirements and plant electricity would be achieved by the installation of a natural gas-fired turbine generator equipped with a heat recovery steam boiler. It had sized the cogeneration plant for a nominal generating capacity of 80 MW and stated that the process heat requirements would vary throughout the year. The additional fluctuating heat load would be provided by an auxiliary natural gas-fired boiler, which

would also provide heat to bring the production plant to standby mode should the cogeneration plant be taken off line.

TrueNorth stated that approval for the interconnection to the Alberta Interconnected Electrical System would be applied for at a later date. It stated that it understood that the Transmission Administrator plans would accommodate its interconnection and pointed out that the FHOSP would have surplus electricity destined for the Pool, adding that if for any reason it could not sell this electricity, the viability of the cogeneration component of the project would be threatened. Cogeneration would supply the on-site electrical load and the majority of the process thermal energy requirements.

17.2 Views of the Interveners

The interveners did not submit evidence regarding the cogeneration or substation applications.

17.3 Views of the Board

The Board is satisfied with the proposed power plant and approves it, pursuant to Section 11 of the Hydro and Electric Energy Act. However, if TrueNorth decides to proceed with the construction of the plant, it will be doing so at its own risk, pending resolution of the outstanding issues related to the substation and the construction of additional transmission facilities out of the Fort McMurray area.

With respect to the substation, the Board will defer consideration of this portion of the application pending resolution of the correct bus voltage as identified by the Transmission Administrator. The Transmission Administrator's Functional Specification indicates a bus voltage of 34.5 kV, whereas TrueNorth's supplemental information indicates this voltage as 25 kV. The Board will consider this aspect of the application upon confirmation of the correct voltage.

18 SUMMARY OF CONDITIONS AND RECOMMENDATIONS

The following conditions drawn from previous sections of this report are meant to serve as a reference for the reader. This is not an exhaustive list, but rather a tool to assist the reader in finding key references within the report. Section numbers referring to sections of the report are provided at the end of each statement.

In the event there is any discrepancy between the directions and recommendations below and those provided in the foregoing text of this decision, the text of the main document is to be relied on for the complete intent.

Conditions of Board Approval

- 1) The Board directs TrueNorth to submit a proposal for treatment of the common FHOSP/Syncrude Aurora North Project lease boundary on or before January 15, 2003.
(Section 6.2.3)

- 2) The Board directs that its approval reflect the need for completion of the technical investigations, submission of reports, and the resulting mine plan for Board approval at least five years prior to start-up of mining activities in these areas. The Board directs that this information be submitted on or before December 15, 2009, for Mining Area 7, and in 2025 for Mining Areas 6 and 8. The additional information will consist of ore quantity and quality, geotechnical stability, and all other issues identified as a result of mining in close proximity to the river. (Section 6.3.3)
- 3) The Board directs TrueNorth to submit a final evaluation of the oil sands resources in Mining Area 1A, including determination of final mining limits, for consideration and approval of the Board on or before December 15, 2007. (Section 6.4.3)
- 4) The Board directs TrueNorth to submit for approval a report describing the location of the new utility corridor alignment, the facilities to be placed in the corridor, any expected impacts to the mining, overburden disposal, and/or in-pit tailings operation, and the plan for relocation of the corridor to allow mining to proceed in Mining Area 7 on or before February 28, 2003. (Section 6.5.3)
- 5) The Board directs TrueNorth to provide an update of the long-term in-pit ore preparation plant relocations by December 15, 2007. (Section 6.5.3)
- 6) The Board directs TrueNorth to submit for approval detailed geotechnical designs for all external overburden disposal areas at least six months prior to field preparation in these areas. (Section 6.6.3)
- 7) The Board directs TrueNorth to submit a report describing a conceptual design of an overburden disposal area that could be constructed in the area east of Mining Area 1 and north of RMS-1 on or before January 15, 2003. This report will include
 - a description of the foundation conditions assumed to complete the conceptual design of the dump and the rationale for those use of those assumptions;
 - a description of the slopes, bench heights, and overall height of the conceptual design, together with a discussion of potential for these design parameters to change substantially as a result of more detailed site investigation and/or analyses;
 - a tabulation of volumes of overburden that could be stored using the conceptual design broken down by benches; and
 - a discussion of the potential uses of the disposal area to offset storage losses arising from potential changes to the west disposal area, changes to the lease boundary treatment, changes to the in-pit tailings deposition schedule and/or volumes, or other uses. (Section 6.6.3)
- 8) The Board directs TrueNorth to continue to monitor, evaluate, and develop solid tailings technology for implementation at its project and to report periodically to the Board on its applicability and merits. The Board also directs TrueNorth to report on its ongoing research and operational related to thickened tailings every year starting in 2003. (Section 7.1.3)
- 9) The Board directs TrueNorth to submit by June 30, 2003, or prior to commencement of OPTA construction,

- a) a report evaluating design and relocation options that would avoid sterilization of mineable resources by construction of the OPTA. This report would include TrueNorth's most up-to-date interpretation of the potential mineability of the oil sands resources near or under the proposed OPTA. (Section 7.2.3)
 - b) an updated assessment of the total storage requirements and the proposed construction schedule for the OPTA to be submitted to the Board for approval prior to commencement of construction of the starter dike. (Section 7.2.3)
 - c) a report that assesses the benefits of any changes to the location of the OPTA from the points of view of resource conservation and operational efficiency, together with an assessment of the potential environmental impacts associated with the changes to location. (Section 7.2.3)
 - d) the results of additional seepage and groundwater modelling, based on hydrogeological parameters obtained from statistically adequate site-specific tests of the OPTA foundation materials, to demonstrate the effectiveness of the proposed perimeter well system. This report will also contain an assessment of contingency measures that TrueNorth could employ if it became apparent that the perimeter well system was not as effective as envisioned. (Section 7.2.3)
 - If TrueNorth is not able to satisfy the Board respecting the effectiveness of the perimeter well system and contingency measures, TrueNorth will be required to install a seepage barrier or pond liner. (Section 7.2.3)
- 10) The Board directs TrueNorth to submit an annual update on its extraction process starting February 28, 2003. The update should include any proposed changes and their impacts on the project. (Section 8.3)
- 11) The Board directs that the amount of asphaltenes rejection be limited to 10 per cent by weight. (Section 8.3)
- 12) a) The Board accepts TrueNorth's commitment and directs TrueNorth to limit solvent loss from the site to not more than four volumes per thousand volumes of whole bitumen production.
- b) The Board also accepts TrueNorth's commitment and directs TrueNorth to have no untreated froth tailings discharged to the tailings area. (Section 8.3)
- 13) As each of the following issues is resolved:
- detailed design of the new tailings management plan,
 - detailed evaluation and design of seepage control from the OPTA,
 - treatment or management of basal aquifer water,
 - in-stream flow needs and need for on-site temporary water storage, and
 - implementation of recommendations from the MLWC sustainability committee,
- the Board directs TrueNorth to submit for approval a new water management plan, including plant and site wide water balances, an evaluation of possible environmental impacts, and an evaluation of impacts to the mine plan. (Section 9.2.3)

- 14) The Board directs TrueNorth to limit the amount of disturbed land at any one time to 5000 hectares. (Section 12.3)
- 15) a) The Board directs TrueNorth to prepare a report for submission to the Board that addresses the manner in which TrueNorth will provide not only for the accounting but for the funding of abandonment, reclamation, and decommissioning of the project. This report is due on the expiry of 12 months after the start of construction.
- b) The Board further directs TrueNorth to obtain an insurance review by an independent consultant to determine the appropriate level of environmental and third-party liability coverage and submit it to the Board prior to the commencement of construction. (Section 13.3)

Recommendations to Alberta

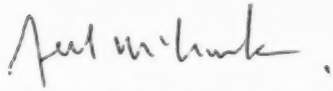
- 1) The Board recommends that Alberta consider conditioning its approval to require TrueNorth to evaluate the option of storage of water on site or temporary diversion of water from another source during low-flow periods in the Athabasca River. (Section 9.2.3)
- 2) The Board recommends that Alberta consider options in its approvals that would limit the licensed amount of water withdrawal from the Athabasca River but still allow TrueNorth some flexibility during commissioning of trains 1 and 2. (Section 9.2.3)
- 3) The Board supports Alberta's intention to condition its approval to require TrueNorth to provide an acceptable mitigation plan prior to mining in the MLWC. (Section 10.3)
- 4) The Board recommends that Alberta direct TrueNorth to convene a committee of stakeholders and regulators, as proposed in the MLWC Sustainability Plan, to oversee the collection of baseline monitoring data, establish the natural variability of the wetland, establish criteria to protect the biotic diversity and function of the no-surface-access zone, critically evaluate proposed mitigation plans in relation to the protection criteria, and evaluate postconstruction monitoring data and adaptive management. (Section 10.3)
- 5) The Board supports Alberta's intention to require detailed mitigation planning for rare plants as part of any EPEA approvals. (Section 11.1.3)
- 6) The Board supports Alberta's intention to require TrueNorth to conduct additional monitoring of wildlife and waterfowl to ensure that the baselines are established. (Section 11.2.3)
- 7) The Board recommends that Alberta direct TrueNorth to meet the requirements that are identified as a result of NSMWG work. (Section 11.3.3)
- 8) The Board supports Alberta's intention to condition the EPEA approval to require further monitoring to provide data to compare to model predictions. (Section 11.3.3)
- 9) The Board supports Alberta's intention to require TrueNorth to demonstrate that all new and

replacement vehicles and equipment meet the latest emissions standards. (Section 11.3.3)

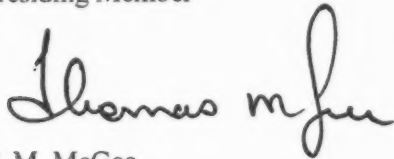
- 10) The Board recommends that Alberta continue to implement measures that would achieve continuous improvement in greenhouse gas emissions per unit of product. (Section 11.4.3)
- 11) The Board supports Alberta in recommending to CEMA that a higher priority be placed on the CEMA end-pit lake subgroup. The Board supports Alberta's intention to condition its approval to direct TrueNorth to develop acceptable mitigation options for its proposed end-pit lake if water quality is problematic.

DATED at Calgary, Alberta, on October 22, 2002.

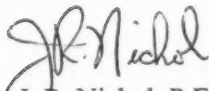
ALBERTA ENERGY AND UTILITIES BOARD



M. Neil McCrank, Q.C.
Presiding Member



T. M. McGee
Board Member



J. R. Nichol, P.Eng.
Board Member

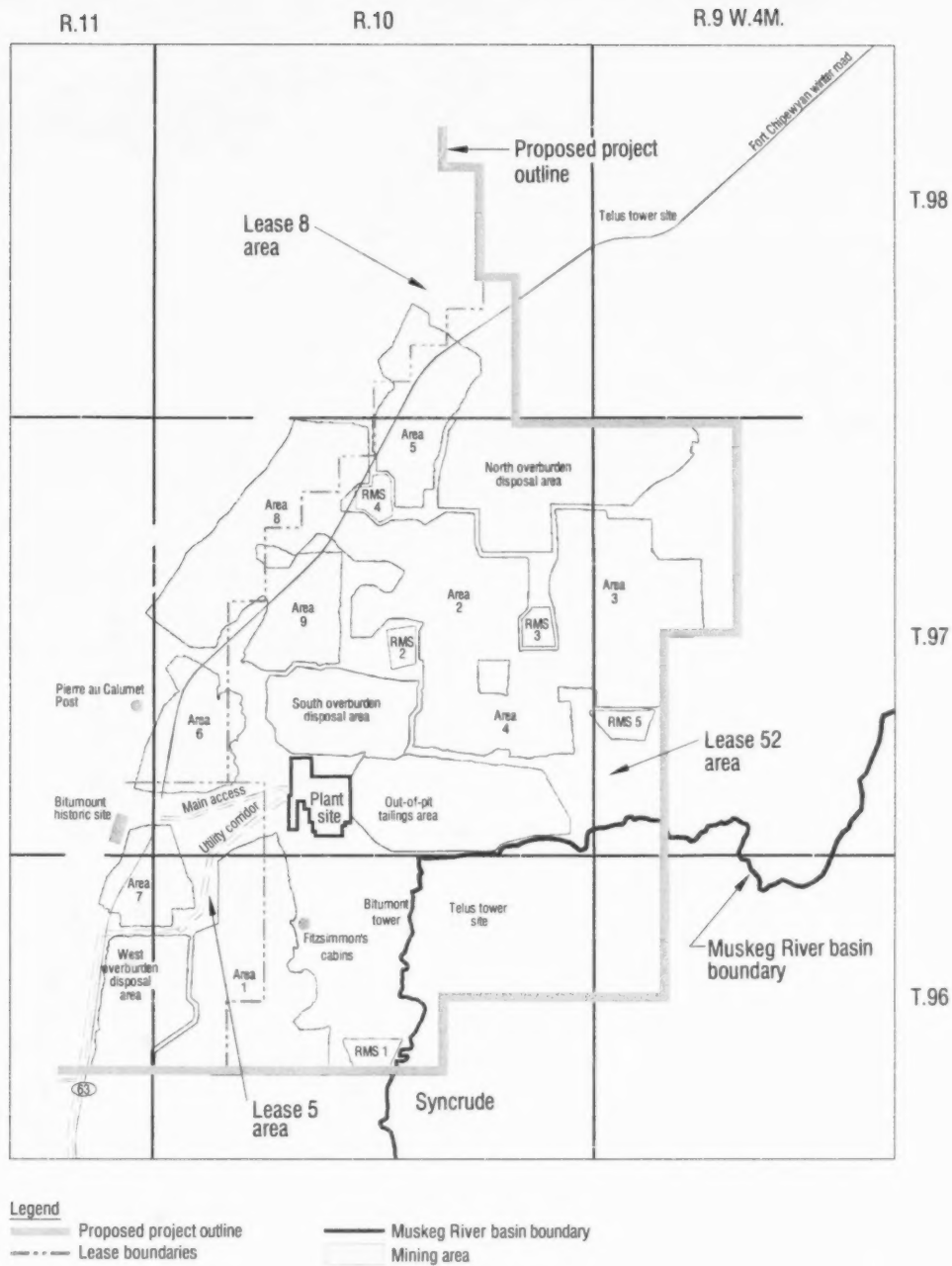


Figure 1. Fort Hills Oil Sands Project Mining Area
Applications No. 1096587 and 2001202
TrueNorth Energy Corporation

Decision 2002-89



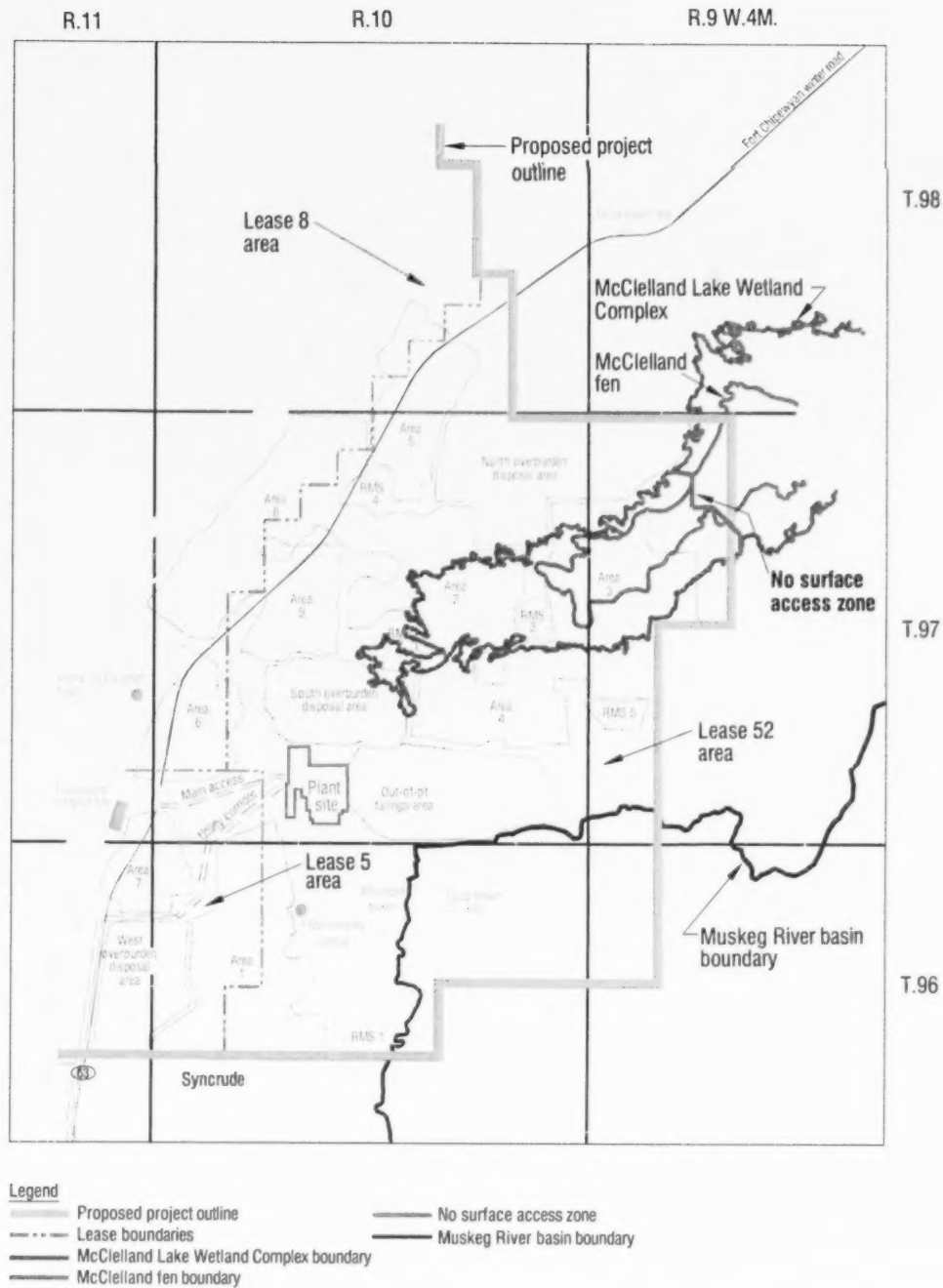


Figure 2. Fort Hills Oil Sands Project - McClelland Lake Wetland Complex
Applications No. 1096587 and 2001202
TrueNorth Energy Corporation

Decision 2002-89



